# New Mexico Wetlands Assistance Guide to Federal Partnerships

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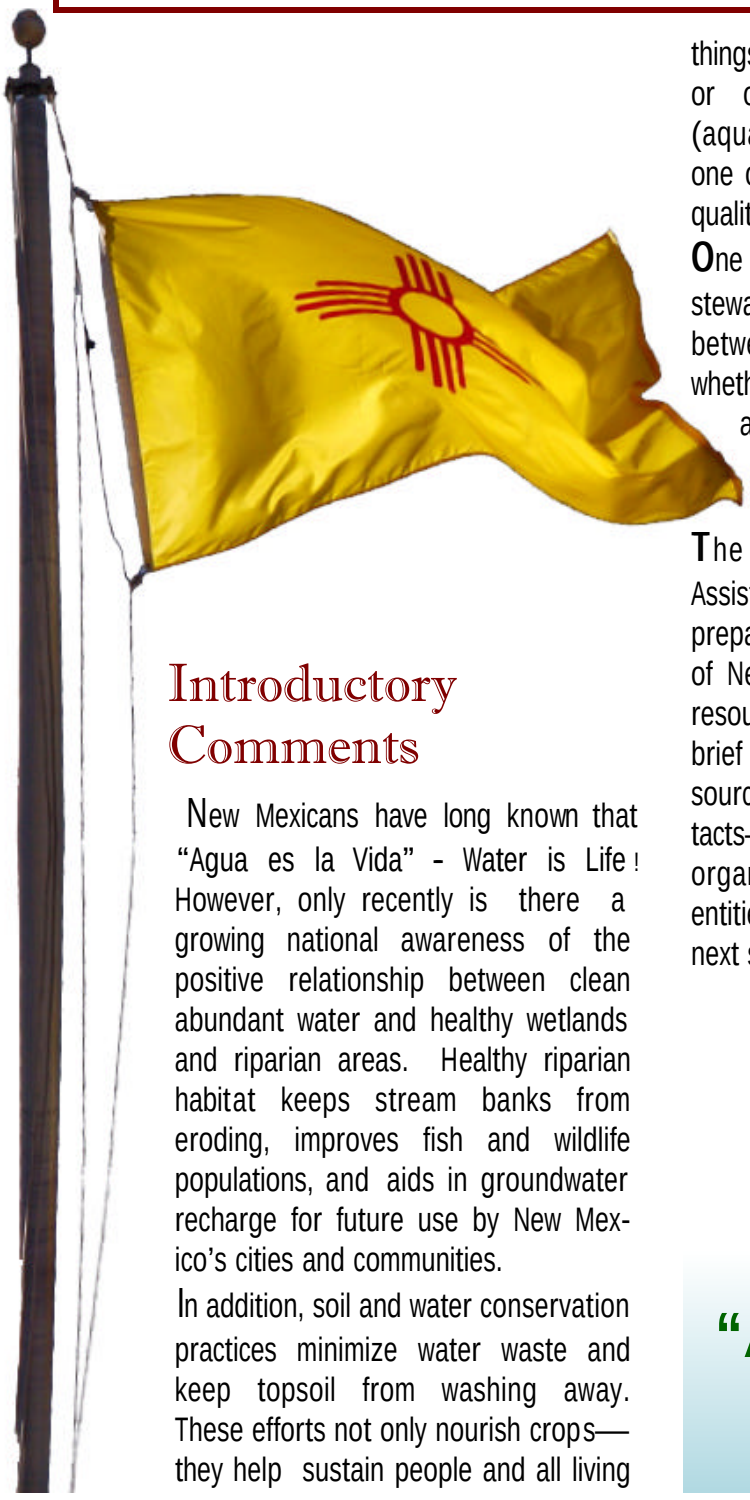

## Introductory Comments

New Mexicans have long known that "Agua es la Vida" - Water is Life! However, only recently is there a growing national awareness of the positive relationship between clean abundant water and healthy wetlands and riparian areas. Healthy riparian habitat keeps stream banks from eroding, improves fish and wildlife populations, and aids in groundwater recharge for future use by New Mexico's cities and communities.

In addition, soil and water conservation practices minimize water waste and keep topsoil from washing away. These efforts not only nourish crops—they help sustain people and all living things, including the smallest insects or organisms living in streams (aquatic macro-invertebrates)—one of our best indicators of water quality.

One of the keys to successful land stewardship practices is partnership between Nature and people—whether land owners and users, agency resource managers, or anyone who values a high quality of life.

The New Mexico Wetlands Assistance Guide is therefore a tool, prepared to assist your stewardship of New Mexico's land and water resources. The Guide provides a brief overview of federal funding sources, options and program contacts—for individuals, businesses, organizations, and government entities—with the intent that your next steps are most rewarding.

**"Agua es la Vida"**

## Nuevo México's Place in History

Centuries before the thirteen US colonies explored west of the Mississippi River in the early 1800s, there was a vast expanse of land called *Nueva España* (New Spain). Spain ruled for over three centuries, 1519-1821; these lands included today's State of New Mexico.

When Spanish rule ended, *Nueva España* was renamed *Republica de México* (Republic of Mexico), and its northern province became *Nuevo México*—a region much larger than today's State of New Mexico This land area encompassed today's Texas panhandle and parts of eastern Arizona, southeastern Utah and southern Colorado.

Independence from Spain meant *México* could now allow the US to trade in the region, hence the opening of the Santa Fe Trail in 1821—including southern routes to *Mexico*, and in 1829 west to *Alta California*. *Mexico's* land holdings were significant and included many present-day states of the southwestern US—New Mexico, Texas, Arizona, Nevada, Utah, much of California, half of Colorado, and portions of Wyoming, Oklahoma, and Kansas—but she could only rule from afar.

When the Mexican American War began in 1846—triggered by US expansionist visions and *Téjas* (Texas) renouncing its allegiance to *México*—US General Stephen Watts Kearney and his military troops took control of Santa Fe, *México's* capital of this northern province. During this four year occupation, Texas joined the Union as the Lone Star State, gaining lands from the high plains area of *Nuevo México*—today's Texas panhandle .

Not until 1848—when *México* signed the Treaty of Guadalupe Hidalgo—did the United States agreed to pay *México* $15 million dollars for surrendered lands. *Nuevo México* (New Mexico) became a US Territory in 1850, and the 47th State of the Union on January 6, 1912.

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**&**

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# What Are Wetlands and Riparian Areas?

Wetlands are the transition zone between water and dry land. Although long debated is the issue of how and where the line between water and dry land is drawn on the ground, federal agencies have agreed to use the same procedures for delineating wetlands for jurisdictional purposes. For a site to be considered a wetland**, one or more of the following three characteristics must occur:

*wet conditions* (wetlands hydrology),
*wet soils* (hydric soils), and/or
*wet-loving plants* (hydrophytic vegetation).

(**Note: For federal jurisdictional purposes, all three characteristics must be met.)

It is possible that a riparian zone—land/water relationship—is also a wetland. This is because riparian zones (sometimes called riparian areas) tend to have wetlands characteristics—of both the *terrestrial ecosystem* (where there is seldom standing water) and the *aquatic ecosystem* (where bodies of water are common as free-flowing or standing water). Plants growing in a riparian zone may be completely under water during a portion of the growing season, yet they may also be exposed to drought stress during other times of the year.

Similarly, wetlands are also transitional lands between terrestrial and deepwater habitats - where the water table is usually at or near the land surface, or the land is covered by shallow water. Furthermore, wetlands are lands where water saturation is the dominant factor determining the nature of soil development and associated plant and animal communities. In some instances, a riparian area might be considered an immature or evolving wetlands exhibiting some of these traits (e.g. young soils). At other times it may be a mature wetlands with fully developed soils, wetlands vegetation and hydrology.

> "It is possible that a riparian zone is also a wetland."

Regardless of where the line is drawn, the historical significance of wetlands will always be important. Native Americans have inhabited the region of New Mexico since before the 1300s, settling near wetlands and riparian areas, and establishing communities which remain to this day. The Spanish, beginning with their exploration of the Southwest in 1541, located and gave names to significant rivers, wetlands, and other places of water - as depicted by the numerous designations of *"río, bosque, laguna, vega, ciénega, ancán, ojo* and *playa".* Centuries of agricultural endeavors would have been unlikely in this arid state, were it not for the floodplain lands and more permanent water sources provided by nature's wetlands and riparian areas.

## New Mexico's Wetlands & Riparian Areas

Today in New Mexico, the riverside *bosque* is easily identified as a "riparian wetland". Even the favorite wet spot for a family garden was historically named "*la joya"*, and translates from Spanish to "the jewel".

Wetlands naturally portray this riparian (land/water) relationship. Various examples common to New Mexico were named by early Spanish explorers:

*Ojos*—seeps and springs;

*Ancán*—oxbows and riverbends;

*Playa* lakes and prairie potholes;

*Lagunas*—spring or stream-fed lakes and ponds with their shores;

*Vegas*—wet meadows;

*Ciénegas*—marshes and bogs;

***R**íos*—streams and rivers with their banks and riverside forests (*bosque*), and

*Acequias*—associated man-made ditches.

## Wetlands Threatened by Human Activities

With decades of misunderstanding about their benefits, wetlands in New Mexico and nationwide have been channelized or drained and cleared, so they could be used for what were considered more productive uses: agriculture, flood control structures, stockyards and livestock production, residential and industrial development, and oil and gas production.

As these activities occur, New Mexico's wetlands and riparian areas are either destroyed or severely compromised. Unknowingly, many human activities promote excessive sediment loading in water-courses and the establishment of undesirable non-native plants—such as Russian olive and salt cedar—which compete with more desirable native plants.

The end result is a threatened quality of life for New Mexico's inhabitants—including our wonderfully diverse cultures and ecological resources—in this appropriately named "Land of Enchantment".

# Status of New Mexico's Wetland Resources

New Mexico is the fifth largest of the fifty United States, with a total area of almost one hundred twenty-two thousand (122,000) square miles. However, less than one percent of these lands (482,000 acres) are covered in wetlands and riparian areas. Approximately one-half of New Mexico's lands (44.6%) are privately owned, not counting Indian lands (a distinct and separate category of private lands) which comprise nearly one-tenth of the State (9.4%). The remaining lands are either federally owned, as public lands (34.2%), or State owned, as Trust lands (11.8%).

New Mexico's current population is under two million, and predominantly rural and agricultural in character. In 1992, pasture and rangeland occupied about eighty-two percent of all land in the state, however, New Mexico is now in the top ten of the fastest growing states in the fifty United States. New Mexico's rivers and flood plains have always been the preferred sites of its inhabitants - first by Pueblo and Plains Indians, then Spanish settlers, and now by a highly mobile society.

Wetland and riparian losses in rural areas can be attributed to conversion to cropland, drawing down water tables or diverting water for irrigation, and overgrazing by livestock. Similarily, the development of urban areas has also caused wetland loss or degradation, however this is caused by encroachment from residential and commercial construction, dewatering for municipal and industrial water supplies, channelization of natural watercourses, and contamination from inadequately treated sewage and industrial waste.

**122,000 Square Miles of Land Ownership in New Mexico**

| Tribal | State | Federal | Private |
|---|---|---|---|
| 9.4 % | 11.8 % | 34.2 % | 44.6 % |

Numerous other causes of loss and degradation to wetlands and riparian areas include: clear cutting and burning; hard-rock mining and related activities that produce toxic acidic or alkaline runoff; placer mining, erosion and sedimentation; sand and gravel mining; road, highway and railroad construction; and dam and reservoir construction in wet areas. Since 1986, wetland losses nationally have been attributed to Urban Development (30%), Agriculture (27%), Silviculture (23%), and Rural Development (21%).

New Mexico's heritage, its diverse cultures, & even today's lifestyles continually rely upon her wetlands and riparian resources. Water can exist without people; however, history clearly demonstrates that we cannot live without water.

An Important Challenge, Therefore, Awaits Us: To ensure that the remaining wetlands and riparian areas are healthy and if necessary be maintained and rehabilitated so they may continue to provide for New Mexico's future use and enjoyment

Sediment overload in the Rio Grande

## Wetland and Riparian Losses to Channelization and Pollution

The Rio Grande is one of New Mexico's major watercourses. However, during the last century it was significantly channelized - from Albuquerque, New Mexico, to El Paso, Texas - to minimize flooding and control the discharge of irrigation waters. Associated dams controlling the release of water are found at Heron, El Vado, and Abiquiu lakes in the northern part of the state, and in the south at Percha, Elephant Butte, and Caballo.

Although these dams have allowed urban and rural development along these waterways, and fostered water-based recreation areas in desert and high mesa ecosystems, the process of channelization has eliminated the river's natural course and flow, which otherwise sustained much of the native vegetation in the riverside bosque (cottonwood willow forests).

Overall, channelization has severely limited, and in most cases eliminated the water and land relationship that would normally have allowed establishment of wetland vegetation along river corridors which in turn supports healthy wetlands and riparian systems. Instead there are degraded banks that contribute to severe soil erosion, sediment buildup in rivers and reservoirs, and the loss of habitat for fisheries, waterfowl and wildlife.

One of the unfortunate repercussions of storing water in dams is the loss of natural overbank flooding which would normally promote regeneration of cottonwood trees. Although the Rio Grande's cottonwood bosque is the largest still-intact cottonwood forest in North America, the outcome of channelization is that these trees are mature (100 to 150 years old), and without flooding will most likely be the last. This represents a loss which historically has been one of New Mexico's important representations of wetlands and riparian areas in North America.


**Playa Lakes Region of the Southern High Plains**

### Playa Lakes Region

Another example of degradation of wetland areas applies to eastern New Mexico and the other four states of the Playa Lakes Region. Throughout the last century, and continuing today, playa wetlands have commonly been subjected to pollutants—from discharges of municipal sewage effluent, storm-water runoff, wastes from stockyards and oil/gas production, and agricultural chemicals.

Some researchers speculate that waste disposal into these affected playas, in excess of what the system can naturally process, may increase the likelihood of waterfowl mortality from diseases such as botulism and avian cholera.

In addition, is the serious threat of contamination to the High Plains Aquifer (Ogallala Formation) in the Playa Region. Playa wetlands—primary source of recharge to this underlying aquifer—provide much of the water used by residents of eastern New Mexico, the Texas panhandle, southeastern Colorado, southwestern Kansas, and western Oklahoma.

However, on January 9, 2001, the Supreme Court ruled (SWANCC v. US Army Corps of Engineers) to deny federal protection for many previously protected non-riverine (isolated) wetlands, such as playas and ponds, unless they are adjacent to riverine systems. (<<< See Map)

This potentially removes Clean Water Act protection for 30-60% of the Nation's wetlands. Individual states must therefore enact laws for protection of isolated waters.

For information on a "Model State Wetland Statute to Close the Gap Created by SWANCC," contact the Association of State Wetland Managers:

(518) 872-1804
aswm@aswm.org

## EPA Grant Assistance

During the early 1990s, the New Mexico Environment Department first received wetlands grant assistance from the US Environmental Protection Agency. Focus: coordinate development of a "Handbook" for the classification and assessment of the State's wetlands and riparian areas.

This project was later contracted to the University of New Mexico's Biology Department (New Mexico Natural Heritage Program), and completed in 1999. The outcome was a two-volume Handbook - a supplement to the State's Wetlands Conservation Plan.

The Handbook is found in the reference section of New Mexico's state libraries, and provides the most current and thorough compilation to date for identifying and assessing New Mexico's wetlands and riparian resources.

This Handbook is in two volumes and entitled: *Handbook of Wetland Vegetation Communities of New Mexico*:

- *Volume I—Classification and Community Descriptions*; and
- *Volume II—Wetland Reference Sites for New Mexico.*

For additional information, visit the website for the NM Natural Heritage Program: www.nmnhp.unm.edu

## New Mexico 2000 — Wetlands Conservation Plan

New Mexico 2000 - Wetlands Conservation Plan is a non-regulatory tool to assist wetlands/riparian stewardship through cooperative approaches, and is a source of information for New Mexicans to understand our precious water resources. An interactive version of the document is available on the Environment Deparment's webpage: http://www.nmenv.state.nm.us/swqb/wetlandsplan-2000.html

Written and organized to be easily understood and enjoyable reading, *New Mexico 2000* takes you on a trip - starting with the pesent decade in New Mexico - while summarizing some factors influencing the recent interest in wetlands conservation. The main thrust of the Plan is twelve foundational concepts developed by an inter-agency Wetlands Task Force. With statewide citizen input at numerous public meetings, these concepts evolved into a comprehensive collection of organized "Recommendations and Action Plans".

The Plan also includes an historical overview of New Mexico's wetlands, taking

you back in time—approximately 450 years to the time of Coronado's Expedition into the New World—particularly the western portion of this continent under Spanish rule, known then as New Spain, of which New Mexico was the vast northern frontier.

Funding for New Mexico's Wetlands Conservation Plan was made possible by the United States Congress, through Section 104(b)(3) of the federal Clean Water Act. The federal wetlands program for New Mexico is administered by Region 6 of the US EPA. EPA's website is: www.epa.gov/owow

Two Volume Handbook of Wetland Vegetation Communities in New Mexico

# The Importance of Wetlands and Riparian Areas

Wetlands and riparian areas are transitional lands between terrestrial and deepwater habitats, where the water table usually is at or near the land surface, or the land is covered by shallow water. These transitional lands are ecologically important and economically valuable to the State, so the healthier their condition, the better their ability to benefit people, plants and animals.

Wetlands and riparian areas provide vegetation and natural floodplain areas that stabilize banks, which in turn help to minimize erosion and improve water quality by filtering pollutants and slowing the force of flood waters. Added benefits:

- 1700 playa wetlands which recharge aquifers for drinking water and irrigation uses, and supply necessary food and shelter for migratory waterfowl of the Central Flyway (central Canada to the Texas Gulf coast);
- important habitat and migration corridors for dependent waterfowl and other wildlife species (246 types of birds, 10 kinds of amphibians, 38 varieties of reptiles, and 60 species of mammals) of which over one-third are rare and endangered species;
- rivers provide city and community drinking water as New Mexicans grows more dependant on water, particularly the Rio Grande;
- fishing, hunting, bird watching, nature photography, camping and hiking—to enable a multi-million dollar recreation industry in New Mexico;
- educational and research opportunities for nature observation and scientific study at New Mexico's schools, colleges and universities;
- the storage and slow release of water, thereby helping New Mexico meet water compact requirements with the state of Texas; and
- Pueblo religious ceremonies—centuries-old uninterupted practices—which continuously rely upon the cultural resources of wetlands and larger riparian systems.

Seeps and springs benefit life.

Wet meadows are wetlands, too!

*Bosque* is a riverside forest.

*Laguna* is the Spanish name for lake.

*Playas* recharge aquifers for cities and towns.

## Serving Humankind 12,000 Years

Spaniards named playas and most of the southwest region's water sources, as they explored their newly claimed lands of *Nueva España* (New Spain) during the fourteenth and fifteenth centuries.

For almost one hundred years, from the 1700s through most of the 1800s, playas and other wetlands empowered active trading between the cultures of *Nuevo México* and the Comanches of the *Llano Estacado* (plains of Texas and New Mexico lying south of the Canadian River).

Furthermore, centuries of agricultural endeavors would have been very unlikely in this arid state, were it not for the floodplain lands and more permanent water sources provided by nature's wetlands and riparian areas.

Likewise, railroads arrived in New Mexico by following the Santa Fe Trail from the east—a route equally dependent upon nature's wetlands and water courses. And not to be forgotten is New Mexico's role in the Central Flyway, which serves even today as an important migratory route for millions of waterfowl.

We all benefit greatly from the land, and the animals, plants and water provided by nature's wetlands and riparian areas. Water can exist without people, however, history clearly demonstrates that we cannot live without water.

## Section 404 & Swampbuster

In general, Section 404 permits are not required for most routine ongoing farming activities—that do not occur in wetlands, or other waters of the US, or do not involve dredged or fill material. In addition, many normal farming, silviculture, and ranching activities that do involve discharges of dredged or fill materials are exempted from Section 404; that is, they do not require a permit. To be exempt, the farming activity must be part of an ongoing farming operation and cannot be associated with bringing a wetland into agricultural production, or converting an agricultural wetland to a non-wetland area.

*Check with the Albuquerque office of the US Army Corps of Engineers if you are unsure whether your ongoing or planned activities in wetlands are regulated under the Section 404 program.*

*505-342-3282*

Similar to the Section 404 program, the Swampbuster program generally allows the continuation of most farming practices so long as wetlands are not converted or wetland drainage increased. However, certain activities, such as clearing, draining, or otherwise converting a wetland are activities addressed by the Swampbuster program.

*Check with your local office of the Natural Resources Conservation Service (formerly Soil Conservation Service) before clearing, draining, or manipulating any wet areas on your land to make sure you maintain your farm program benefits.*

# Federal Regulatory Programs:

## Endangered Species Act: Section 7 and 10

The Endangered Species Act requires federal agencies to conserve endangered and threatened species, whether plant or animal. Specifically, this Act prohibits any person from "taking" endangered or threatened species—and is interpreted broadly to include killing, harassing, or harming a protected species. The definition of "harm" includes modifying or degrading a species' habitat such that the change would significantly impair breeding, feeding, or shelter and would result in injury to the species.

Under Section 7 of this Act, all federal agencies must ensure that their *actions* are:

- not likely to jeopardize the continued existence of any endangered or threatened species, or
- adversely modify or destroy any of their habitat.

These requirements apply to all activities carried out, funded, or regulated by a federal agency—including activities in wetlands.

Not well understood by landowners is Section 10 of the Act—the Safe Harbors portion—which rewards landowners for creating or improving endangered species habitat. In principle it states: "if you (the landowner) build it and they come—then you won't be penalized". In other words, if the baseline on a property is none or better for the targeted species, then landowners will not be penalized in the use of their property, should the endangered species later arrive and/or thrive.

States can propose or support the listing of wetlands-dependent species. Listing, however, is based on the status of the species and not simply an attempt to protect wetlands. States may also seek to engage landowners in conservation agreements that may preclude the need for listing a species.

## The Clean Water Act: Section 404

The U.S. Congress enacted the Clean Water Act to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." Section 404 of this Act establishes a program to regulate the excavation or placement of fill material into "waters of the United States" without regard to their navigability (rivers, lakes, wetlands, arroyos, or any place with the hydrologic capacity to convey water). This does not include areas like manufactured cattle tanks, or farm ponds (within the high water mark) used exclusively for irrigation. Regulated activities include:

- fill materials for development (such as pads, utilities and easements),
- water resource projects (such as dams and levees),
- infrastructure development (such as highways and airports), and
- conversion of wetlands to uplands (non-wet areas) for farming and forestry.

The basic premise of the Section 404 program is that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment, or if the nation's waters would be significantly degraded. In other words, if you apply for a permit, you must show you have:

- taken steps to avoid wetland impacts where practicable;
- minimized potential impacts to wetlands;
- provided compensation for any remaining, unavoidable impacts through activities to restore or create wetlands.

Regulated activities are controlled by a permit review process, although Section 404(f) exempts some activities from regulation. Most routine ongoing farming activities do *not* require Section 404 permits, and include many ongoing farming, ranching, and silviculture practices. (See Chart on Next Page > > > )

## The Food Security Act & Agricultural Wetlands

Farmers who own or manage wetlands are directly affected by two important Federal programs:

(1) The Swampbuster provisions of the Food Security Act, which withholds certain Federal farm program benefits from farmers who convert or modify wetlands; and

(2) Section 404 of the Clean Water Act, which requires individuals to obtain a permit before discharging dredged or fill material into waters of the United States, including most wetlands.

Together, these two programs have helped reduce the rate at which wetlands are converted to agriculture and other uses. If you remotely suspect you may need a permit, contact your local NRCS office or the Corps of Engineers district office in Albuquerque to determine your quickest course of action for permitting the activity.

| Section 404 Permit Not Required |
|---|
| Established (ongoing) farming, ranching, & forestry activities |
| Plowing , seeding or cultivating |
| Harvesting food, fiber, & forest products |
| Upland soil & water conservation practices |
| Maintenance (but not construction) of drainage ditches |
| Minor drainage (be sure that it's minor) |
| Construction & maintenance of acequias, irrigation ditches, & farm/stock ponds |
| Construction & maintenance of farm & forest roads, in accordance with best management practices |
| Maintenance of structures, such as dams, dikes & levees |

## The Farm Bill & Swampbuster Provisions

Swampbuster is the Wetland Conservation provision of the Farm Bill. Swampbuster reduces the incentives to convert wetlands to croplands by denying eligibility from almost all farm program benefits on *all* acres operated by a grower who either converts a wetland, or plants on a converted wetland. Specifically, the Swampbuster provisions withhold Federal farm program benefits from any person who:

- Plants an agricultural commodity on a converted wetland that was converted by drainage, dredging, leveling, or any other means (after December 23, 1985);
- Converts a wetland for the purpose of or to make agricultural commodity production possible (after November 28, 1990).

However, the 1996 Farm Bill does allow persons who have converted a wetland to mitigate for the losses of functions and values, within a reasonable period of time—if conversion was done without intent to violate the law. This is important, so as to not forfeit eligibility for USDA benefits, such as loans, disaster payments, crop insurance, etc.

Therefore, *before* starting any new activity on suspected wet areas, landowners should contact their local Natural Resources Conservation Service office to verify a wet area determination. Farmers may also obtain information about Swampbuster, Clean Water Act Section 404, and learn about preparing mitigation plans.

For Fact Sheets about wetlands and agricultural programs, contact EPA's Wetlands Hotline (800) 832 - 7828, or access it on the Internet:
www.epa.gov/owow/wetlands/contents

## Reasons to Restore Wetlands

The complex role wetlands play in the landscape is not fully understood, yet today, more people realize wetlands must be restored and protected. In some cases, the benefits are to the landowner; in others, they are shared by society as overall environmental improvement:

*Improve water supplies*—wetlands are natural reservoirs for rainwater and runoff, allowing recharge of underground water supplies and extended stream flows—critical for desert riparian systems.

*Improve water quality*—wetlands can provide natural pollution control. Many aquatic plants and organisms are known to convert dangerous chemicals into less harmful elements.

*Filter sediment*—as wetlands trap sediment from storm events, they help clean water before it reaches lakes and reservoirs downstream.

*Provide wildlife habitat*—all of America's wild ducks and geese depend on wetlands, as do 1/3 of threatened or endangered species. Plus people enjoy fishing, hunting and the beauty of wetlands.

*Reduce soil erosion*—because wetlands slow water flow downstream, they curtail forces of erosion.

*Prevent flooding*—since many wetlands store water temporarily, they lessen flood damage downstream, by allowing water to percolate into the ground and help restore water tables.

## Nationwide Permit 27 of the Clean Water Act

Nationwide Permit 27 allows lands that have been converted to wetlands—often through wetlands incentives programs—to be reverted to its prior condition and used within five years *without* requirements of obtaining an individual Section 404 permit (from the Corps of Engineers).

For example, a landowner may choose to enter into a five-year wetlands/wildlife enhancement agreement with the US Fish and Wildlife Service, or NRCS. When the time period ends, the land can revert back to its previous use (such as farmland), or the agreement may be renewed by the landowner for another five years.

Nationwide Permit 27 is just one type of *general* permit, and is issued for five-year periods—for categories of activities that have *minimal* individual and cumulative impacts. General permits do *not* need individual review, so they can occur with little, if any, delay or paperwork. However, once issued, a general permit may be modified or revoked if the permitted activities are found to have had adverse environmental impacts.

Some activities included under nationwide permits include minor discharges and dredging, wetland and riparian restoration and creation activities, temporary construction, boat ramps, and farm buildings.

For specifics on NM Corps permits, browse the Internet: www.spa.usace.army.mil/reg/nnwpsumNM.htm

# What Are Your Options With Agricultural Lands?

The following table is a summary of the wetland types, labels and criteria. Follow the use, maintenance and improvement guidelines to stay eligible for USDA farm program benefits. Before starting any new activity, contact your local NRCS office for assistance. Source: USDA Natural Resources Conservation Service; 3/95.

**Options With Agricultural Lands To Maintain Eligibility for USDA Farm Program Benefits**

| Name & Label | Criteria for Determination | Authorized Cropping | Authorized Maintenance or Drainage |
|---|---|---|---|
| Prior Converted Cropland (PC) | Converted & cropped before 12/23/85 | No restrictions. | No restrictions. |
| Farmed Wetland (FW) | *Manipulated & cropped before 12/23/85.<br>*Still meets wetland criteria.<br>*Includes potholes, playas, & pocosins.<br>*Includes other wetlands that are seasonally flooded or ponded for 15 consecutive days.<br>*Not abandoned. | May be farmed as it was before 12/23/85. | May be maintained to the extent that it existed before 12/23/85. |
| Wetland (W) | *Meets wetland criteria.<br>*Not converted after 12/23/85. (Includes abandoned wetland.) | May be farmed under natural conditions without removal of woody vegetation. | At level needed to maintain original system on related FW, FWP & PC.<br>Must not convert additional W or exceed scope and effect of system prior to 1985. |
| Artificial & Irrigation Induced Wetland (AW) | Man-made wetlands on areas previously non-wetland. | No restrictions. | No restrictions. |
| Converted Wetland (CW) | Converted after 12/23/85 and before 11/28/90. | Production of agricultural commodities will cause ineligibility. | Maintenance allowed to original scope and effect of system. |
| Converted Wetland (CW + year) | Converted after 11/28/90. | Conversion causes ineligibility.<br>Production of agricultural commodity is not an issue. | Not relevant. |
| Farmed Wetland Pasture & Hayland (FWP) | *Converted before 12/23/85.<br>*Not abandoned.<br>*Used as pasture or hayland.<br>*Still meets wetland criteria.<br>(Includes PC or FW where crops were not grown in previous 5 years, but used for pasture or hay during that period.) | Used for pasture and hay production. | Maintenance allowed to extent that existed before 12/23/85, but not improved. |
| Converted Wetland for Non-Agricultural Use (CWNA) | *Requested prior to start of conversion.<br>*Only certain purposes allowed.<br>*For post approval, person must document non-agricultural use. | Production of agricultural commodities will cause ineligibility. | No restrictions. |
| Non-Wetland (NW) | Does not meet criteria under natural conditions.<br>(Includes wetlands converted prior to 12/23/85, but not cropped and do not meet wetland criteria.) | No restrictions. | No restrictions. |
| Wetlands that have been Manipulated (WX) | Wetlands that have been manipulated after 12/23/85, but production not made possible. | Would cause ineligibility if production was later made possible. | No restrictions as long as production not made possible and adjacent wetland not affected. |

# Non-Regulatory Federal Programs:

## Wetlands Reserve Program

The Wetlands Reserve Program (WRP) is voluntary and encourages private land owners to return some farmland acreage to its natural state, such as wetlands. Landowners who participate in WRP may sell a conservation easement or enter into a cost-share restoration agreement with USDA to restore and protect wetlands.

The landowner voluntarily limits future use of the land, yet retains private ownership, continues to control access to the land—and may lease the land—for hunting, fishing, and other undeveloped recreational activities. At any time, a landowner may request that additional activities be evaluated to determine if they are compatible uses for the site. This request may include such items as permission to cut hay or graze livestock. Compatible uses are allowed if they are fully consistent with protection and enhancement of the wetland.

The landowner and NRCS develop a plan, in consultation with the State Technical Committee, for restoration/maintenance of the wetland—utilizing permanent easements, 30-year easements, or 10-year minimum restoration cost-share agreements (which do not require an easement). USDA pays 75—100 percent of wetland restoration costs, and other agencies and organizations may partner to provide additional assistance to the landowner. To date, 3700 WRP easements exist in the US.

## Wildlife Habitat Incentives Program

The Wildlife Habitat Incentives Program (WHIP) is a voluntary fish and wildlife habitat incentives program for private lands—to develop habitat for upland wildlife, wetlands wildlife, threatened and endangered species, fish, and other wildlife. With NRCS technical and financial assistance, participants who own or control land agree to prepare and implement a wildlife habitat development plan or practices—in consultation with the local conservation district and State Technical Committee.

The plan describes landowner goals for improving wildlife habitat—and includes a list of practices and a schedule for installing them, with detailed steps to maintain habitat for the life of the agreement. WHIP funds cannot be used for mitigation, land designated as converted wetlands, nor for Federal land or lands where success is questionable.

Since WHIP funds are distributed to States based on State wildlife habitat priorities, plans may be implemented in cooperation with funding and expertise from other Federal, State, or local agencies, conservation districts, or private conservation groups. USDA and participants enter into a 5—10 year cost-share agreement and USDA pays up to 75 percent of the cost of installing wildlife habitat practices. Participants allow NRCS or its agents access to monitor progress of the project.

For specifics on WRP or WHIP, contact USDA, your local conservation district, NRCS, State Cooperative Extension Office, Farm Service Agency, or the Internet: www.nrcs.usda.gov or www.fsa.usda.gov

## NRCS Identifies Ag Wetlands

Four Federal agencies involved in wetlands protection have agreed to recognize the Natural Resources Conservation Service (NRCS) - formerly the Soil Conservation Service—as the lead agency for identifying wetlands on agricultural lands. Farmers now rely on a single wetlands determination by the NRCS—for both the Clean Water Act Section 404 program and the Farm Bill Swampbuster program.

The EPA, US Army Corps of Engineers (Corps), the NRCS, and the Fish & Wildlife Service signed a memorandum of agreement on January 6, 1994, which outlines this approach. NRCS will determine if wetlands are on agricultural lands. Areas that meet this definition may include intensively used and managed cropland, hayland, pasture land, orchards, vineyards, and areas which support wetland crops (e.g., cranberries and rice).

Other types of land (e.g., range lands, forest lands, woodlots, tree farms) generally will continue to be evaluated by the Corps, using the 1987 Corps Wetlands Delineation Manual. However, there are two exceptions:
(1) NRCS may do wetland delineations on non-ag lands that occur as small inclusions within agricultural lands, and on lakes, ponds, and streams that occur on agricultural lands; and
(2) NRCS will be the lead Federal agency for delineating wetlands on non-agricultural lands where delineation is requested by a landowner/operator who is a USDA program participant.

## Farm Service Agency Benefits Water Quality

The Conservation Reserve Program (CRP) has created significant improvements in water quality across the Nation—by converting highly erodible and/or environmentally sensitive cropland to permanent vegetative cover.

According to the NRCS, each acre under CRP contract reduces erosion by an average of 19 tons of topsoil a year. This improves the quality of water in streams, lakes, and other bodies of water—not only by reducing sediment, but also by reducing the amount of nutrients and pesticides swept into bodies of water along with America's valuable topsoil.

On top of this, producers who enroll acreage in CRP greatly reduce their application of pesticides and nutrients on these acres, largely eliminating CRP lands as a potential source of runoff containing excess agricultural pesticides and nutrients.

Additional benefits of sediment reduction include:

- Lower water treatment and sediment removal costs for community water systems;
- Reduced flood damage;
- Improved aquatic and riparian area habitats;
- Larger/more diverse populations of aquatic-based wildlife; and
- Increased water-based recreational values.

## Environmental Quality Incentives Program

The Environmental Quality Incentives Program (EQIP) was established by the 1996 Farm Bill to provide voluntary agriculture-related conservation programs for farmers and ranchers who face serious threats to soil, water, and related natural resources. EQIP provides technical, financial and educational assistance, often in coordination with CRP and WHIP.

Eligibility for EQIP is limited to persons engaged in livestock or agricultural production. The program offers:

- 5—10 year contracts that provide incentive payments and cost sharing for conservation practices identified in the producer's site-specific plan.
- Cost sharing that pays up to 75 percent of costs of certain conservation practices, such as grassed waterways, filter strips, manure management facilities, capping abandoned wells, and other practices.
- Incentive payments for various agricultural land management practices, including wildlife habitat management.

All EQIP activities must be carried out according to a conservation plan—site-specific for each farm or ranch—that is developed by producers with help from local conservation districts. Farm Service Agency staff work with USDA—through State Technical Committees and local work groups—for the delivery of these and other farm programs.

## Conservation Reserve Program

The Conservation Reserve Program (CRP) is a voluntary program for agricultural landowners (if a tenant, the producer must be a participant with an eligible owner or operator). Through CRP, you can receive annual rental payments based on the agriculture rental value of the land, and receive cost-share assistance—up to 50 percent of the participant's costs for establishing the approved practices—for temporarily retiring environmentally sensitive cropland for the benefit of fish and wildlife resources. Contract duration ranges 10—15 years.

The CRP initiative requires resource-conserving covers be provided on eligible land (cropland and marginal pasture). The acreage must also be determined by the NRCS to be eligible and suitable for any of the following practices:

- Riparian buffers;
- Filter strips;
- Grass waterways;
- Shelter belts;
- Field windbreaks;
- Living snow fences;
- Contour grass strips;
- Salt tolerant vegetation; or
- Shallow water areas for wildlife.

The Conservation Reserve Program is administered by the Farm Service Agency (FSA) in cooperation with the NRCS; State Cooperative Extension offices; State forestry agencies; and local soil and water conservation districts.

For specifics on EQIP or CRP, contact USDA, your local Conservation District, NRCS, State Cooperative Extension office, Farm Service Agency, or browse the Internet:
www.nrcs.usda.gov or www.fsa.usda.gov

## North American Waterfowl Management Plan

The purpose of the North American Waterfowl Management Plan is to protect, restore and enhance North American wetlands important to waterfowl and other wetland-dependent bird species. Any landowner (federal, state, group, or individual) with property of significance to waterfowl and other wetland dependent species, and who wishes to restore or enhance land, may apply to receive administrative and financial support through the US Fish and Wildlife Service and other cooperating partners (such as NRCS, Ducks Unlimited, sporting groups and industries).

Although the Plan is implemented at the grassroots level—by partnerships called "joint ventures"—partners include federal, state, provincial and local governments, businesses, conservation organizations and individual citizens. Funding availability varies with capabilities of each joint venture. Current goals are to protect 12.2 million acres of wetland ecosystem habitat and restore/enhance 15.2 million acres.

This partnership effort was prompted by a discovery in 1985—North American waterfowl populations had plummeted to record lows. Historical data indicated the US had lost—since the first settlers arrived—more than 50 percent of the original 220 million acres of wetland habitat that waterfowl depend on. Across Canada, where much of US wintering waterfowl nest, the losses ranged from 29—71 percent.

In response, a strategy was born—the *North American Waterfowl Management Plan (NAWMP)*—for international cooperation in restoring waterfowl populations to 1970s levels. NAWMP was signed by the US and Canada in 1986; and by Mexico in 1994.

## North American Wetlands Conservation Act of 1989

The North American Wetlands Conservation Act is the catalyst for building public-private partnerships in the US, Canada and Mexico. The Act provides matching funds for projects involving acquisition, restoration, enhancement, creation, management, and other activities that conserve North American wetland ecosystems and the fish/wildlife dependant on them.

The Act establishes the infrastructure and a source of funding to assist goals of the North American Waterfowl Management Plan. Since 1991, more than 1,000 partners have been approved for funding under the Act. Approximately 4.6 million acres of wetlands and associated uplands have been acquired, restored, or enhanced in the United States and Canada, while nearly 10 million acres have been affected in large biosphere reserves through conservation education and management plan projects in Mexico.

For further information on conservation programs that affect waterfowl or wetland dependent bird species, contact your state office of the US Fish & Wildlife Service, or browse the Internet:
www.northamerican.fws.gov

Playa Lakes Joint Venture—Eastern New Mexico


## Habitat Joint Ventures

There are presently eleven habitat joint ventures in the United States and three in Canada. Administered by the US Fish and Wildlife Service in cooperation with other partners, joint ventures develop implementation plans, focusing on areas of concern identified in the North American Waterfowl Management Plan.

Joint Venture Offices of the USFWS work with local conservation groups, and state and federal officials to help conserve wetlands that waterfowl critically need for survival. These volunteer, non-regulated partnerships not only advance waterfowl conservation, but make substantial contributions toward the conservation of all wetland and associated upland dependent species:

- Protection strategies that include habitat acquisition, leases, conservation easements, and management agreements with private landowners.
- Restoration activities that can be seen along the migratory flyways, including NM playas.
- Habitat enhancement activities that include rest/rotational grazing practices, seasonal flooding of active crop lands, and construction of nesting islands and structures for waterfowl and song-birds.

For Joint Venture projects in New Mexico contact:
US Fish & Wildlife Service
Ecological Services Division
500 Gold Avenue SW
Albuquerque, NM 87103
505-248-6786

## Reestablishing Original Natural Communities

Partners for Fish and Wildlife emphasizes habitat restoration (establishment of original natural communities) over enhancement, with special consideration given to projects that:

(1) Contribute to survival of endangered/threatened, or candidate species, or migratory birds of management concern;
(2) Contribute to meeting the goals of the North American Waterfowl Management Plan;
(3) Are located very close to existing habitat, so fragmentation of habitats would be reduced and re-colonization by a full component of native plants and animals could easily occur;
(4) Contribute to the restoration of globally or nationally imperiled natural communities;
(5) Will result in a self-sustaining system that is not dependent on artificial structures (although projects using levees, dikes, diversion terraces with water-level control devices, for example, are frequently funded);
(6) Will use native self-propagating species; or,
(7) Provide education and outreach opportunities.

For specifics on Partners for Fish & Wildlife, plus related Farm Bill programs, contact:
US Fish & Wildlife Service
500 Gold Avenue SW
Albuquerque, NM 87103
505-248-6786

Or browse the Internet:
partners.fws.gov/index.htm
or
http://partners.fws.gov/What_we_do/overview.html

# USFWS: Partners for Fish and Wildlife

Partners for Fish and Wildlife (PFW) offers private (non-federal) landowners technical and cost share assistance (up to 100 percent of total cost) for voluntarily restoring fish and wildlife habitat on their land—including degraded or converted wetlands and upland habitats meeting eligibility criteria.

Administered by the US Fish and Wildlife Service (USFWS), the program emphasizes the reestablishment of original natural communities—native vegetation and ecological communities—for benefit of fish and wildlife, in conjunction with needs and desires of private landowners. Objectives are:

- restore, enhance, and manage wetlands for fish and wildlife habitat;
- promote profitable land use for agriculture, industry, and private landowners; and
- promote a wise and lasting land-use ethic.

Gila trout

In addition to providing restoration assistance—such as informal advice on design/location of potential projects, or design/funding of restoration projects under a voluntary cooperative agreement with the landowner—the USFWS also enlists other partners to help restore wildlife habitat. Partners include Federal agencies, Tribes, State and local government, conservation organizations, academic institutions, businesses and industries, school groups and private individuals. Most project agreements are for 10 years, although demonstration projects are 50 percent cost-shared, not to exceed $5,000 if less than 10 years.

Since the program began in 1987, these partnerships have generated significant accomplishments—primarily focused on restoration of wetlands, native grasslands, stream banks, riparian areas, and in-stream aquatic habitats. These restored fish and wildlife habitats provide important food, cover, and water for Federal trust species including:

- migratory birds (e.g. waterfowl, shore/wading birds, songbirds, birds of prey);
- anadromous fish (ascending rivers from the sea for breeding);
- threatened and end angered species;
- as well as other fish, wildlife and plant species that have experienced population declines in the recent past.

Wildlife and fisheries restoration projects may include, but are not limited to:

- Restoring wetland hydrology by plugging drainage ditches, breaking tile drainage systems, installing water control structures, dike construction, and re-establishing connections with waterways.
- Planting native trees, shrubs, and grasses in formerly forested wetlands and other habitats.
- Enhancing fisheries by reduction of non-point source pollution and revegetation of stream banks.
- Installing fencing and off-stream livestock watering facilities to allow for restoration of stream and riparian areas.
- Removal of exotic plants and animals which compete with native fish and wildlife and alter their natural habitats.
- Prescribed burning as a method of removing exotic species and restoring natural disturbance regimes necessary for some species survival.
- Reconstruction of in-stream aquatic habitat with bioengineering techniques.

The USFWS also provides biological technical assistance to USDA agencies implementing key conservation programs of the Farm Bill. This helps USDA meet technical challenges while maximizing benefits to fish and wildlife resources. USFWS assists on-the-ground habitat restoration actions associated with several Farm Bill programs already mentioned:

- Swampbuster;
- Wetlands Reserve Program;
- Conservation Reserve Program;
- Wildlife Habitat Incentives Program;
- Environmental Quality Incentives Program; and
- Farm Service Agency (FSA) Farm Credit Programs.

## Sikes Act Authorizes the Habitat Stamp Program

The federal legislation that authorizes the Habitat Stamp Program is the Sikes Act. It provides funding for conservation and rehabilitation of lands that benefit watersheds, riparian areas and wetlands, which in turn enhance wildlife habitat. Program funds are generated directly from hunters, anglers and trappers, since the Habitat Stamp is made part of an individual's hunting/fishing license.

Through a Citizen Review Committee, recommendations are taken from the public and presented to the State Game Commission for determination of project funding. Eligible purposes include:

- law enforcement,
- research and census information,
- habitat improvement,
- propagation,
- transplants, and
- regulated taking, etc.

Sikes Act funding may also be used to obtain access where currently there is no access available, such as acquisition of an easement for a trail or road, or construction of the actual road/trail to mitigate a land-locked situation.

Since 1991, over four million dollars have been expended in New Mexico for vegetative treatments, riparian and fishery enhancement, improving water availability for wildlife, road management, fencing modifications and wildlife surveys. Currently in New Mexico, one million dollars are received annually, with one-half funding riparian-type projects.

The Habitat Stamp Program is just one of many beneficiaries of the federal Challenge Cost Share Program, which uses matching funding from private or state programs to benefit wildlife and fisheries. Eligible programs include conservation education, Rocky Mountain Elk, Ducks Unlimited, Pheasants Forever, Trout Unlimited, and many others.

## Dingell-Johnson & Pittman-Robertson Acts

Two other pieces of federal legislation benefit wildlife, fisheries, and their habitats, thereby aiding the restoration and enhancement of wetlands and riparian areas. Only state Department of Game and Fish projects are eligible for funding. These acts are the Dingell-Johnson Act (actually the Federal Aid and Sport Fish Restoration Act) and the Pittman-Robertson Act of 1937 (which provides funds for Federal Aid in Wildlife Restoration):

1. The Dingell-Johnson Act provides states with federal grant money at a 75 federal to 25 state match to restore fishing opportunity. Eligible purposes are for:

- restoration, conservation, management and enhancement of sport fish, and the provision for public use of and benefits from these resources; and
- enhancement for the public's understanding of water resources and aquatic life forms, and the development of responsible attitudes toward the aquatic environment.

2. The Pittman-Robertson Act of 1937 authorizes funds to come from excise taxes paid by manufacturers of sporting firearms and ammunition, pistols and revolvers, and archery equipment. The state's level of eligibility is based on a formula that also includes sales of hunting licenses. This funding contributes approximately $3 million a year to New Mexico game management. Eligible purposes are for:

- the restoration, conservation, management and enhancement of wild birds and mammals, and the provision for the public use of and benefits of these resources; and
- the education of hunters and archers in the skills, knowledge and attitudes necessary to be responsible hunters or archers.

For more information on programs which benefit wildlife and fisheries habitat, contact your local non profit conservation organization, or the New Mexico Department of Game and Fish:
www.gmfsh.state.nm.us/

## USFWS Challenge Cost Share

The objectives and purposes of the US Fish and Wildlife Service's Challenge Cost Share (CCS) program are almost the same as the Partners for Fish and Wildlife Program (see preceding page), except that CCS can be used to a greater extent to fund enhancement and other projects which do not necessarily involve taking land out of production, or restoring native, self-sustaining vegetation.

The program is best suited for enhancement projects such as moist soil habitats and can provide up to a 50% cost share for worthy projects. Eligibility is the same as Partners for Fish and Wildlife (PFW), and requires a minimum of 10-year management agreement. Fortunately, CCS can be used for wildlife/wetland management on lands that remain in production, although funding cannot be used to secure land use rights.

The program works exactly like PFW but with differing eligibility factors. Proposed projects must not qualify for USDA funding, which it might more likely receive. Therefore, if CCS is an appropriate funding mechanism, a landowner should contact their state's USFWS representative for further discussion and arrangement of a site visit by a USFWS field biologist, who will follow the same procedures as indicated for PFW.

For specifics on Challenge Cost Share in NM contact:
US Fish & Wildlife Service
500 Gold Avenue SW
Albuquerque, NM 87103
505-346-2525; 346-2542 fax
www.southwest.fws.gov

## NFW Foundation Challenge Grants

Congress created the non-profit National Fish & Wildlife Foundation in 1984 to benefit the conservation of fish, wildlife and plants, and the habitat on which they depend. Priorities for conservation projects are:

- Habitat protection and restoration on private lands;
- Sustainable communities through conservation; and
- Conservation education.

Federal and private funds are provided annually to the NFW Foundation and awarded as challenge grants to local on-the-ground conservation projects. The term "challenge grant" indicates that these seed funds must be matched with non-federal funding (or goods/services of equal value) from public and private participants.

The NFW Foundation fosters conservation partnerships among federal, state and local governments, corporations, private foundations, educational institutions, individuals and non-profit organizations.

None of the congressionally appropriated funds are used for operating expenses; 97 percent of total revenues go directly to conservation projects. The NFW Foundation does not support lobbying, political advocacy, or litigation.

For specific NFW Foundation programs browse the Internet: www.nfwf.org

## Corps of Engineers: Cost-Share Programs

On March 27, 1998, the US Army Corps of Engineers signed a Memorandum of Understanding with the National Fish and Wildlife Foundation to foster cooperation on projects of mutual interest—fish and wildlife habitat restoration, endangered species protection, non-structural flood control, and wetlands restoration.

To date, efforts have focused primarily on creating partnerships to fulfill cost-share requirements for environmental restoration projects, funding local sponsors for environmental restoration projects, and working with the regulatory program on mitigation requirements or on special area management plans. "Study-only" proposals are not eligible, however eligible Cost-Share programs include:

1. Section 206—Aquatic Ecosystem Restoration—in the public interest for improving quality of aquatic environments (ecosystem structure and function), often involving manipulation of hydrology in and along water bodies, including wetland and riparian areas; and
2. Section 1135—Project Modifications for Improvement of the Environment—for improving degraded ecosystem structure, function, and dynamic processes to a less degraded, more natural condition. Eligible areas include Corps-built or Corps-operated water resources projects, and areas where construction or operation of such projects has contributed to degradation.

Recent New Mexico Cost-Share projects involve Santa Ana Pueblo, the Jemez River, Abiquiu Dam, and Albuquerque BioPark.

## Five Star Restoration Challenge Grants

The Five Star Program—coordinated through the EPA and NFW Foundation—provides modest financial assistance to support community-based wetland and riparian restoration projects that build diverse partnerships and foster local natural resource stewardship. Year 2000 was the second year of the program which is open to any public or private entity. Fifty-nine projects were awarded grants, ranging from $5,000—$20,000, out of the 200 applications received.

The stars in "Five-Star" are partners, funding sources, and/or participants necessary to complete the project:

- Schools or youth organizations (e.g. state/local Youth Conservation Corps, county job training programs);
- Local or tribal governments (e.g. boards of county commissioners, departments of planning, environment, parks/recreation);
- Local businesses and corporations;
- Foundations or other funding sources;
- Conservation organizations or local citizen groups; and
- State/federal resource management agencies.

Projects must therefore involve diverse partnerships of ideally five organizations, contributing funding, land, technical assistance, workforce support, and/or other in-kind services. The projects must include a strong on-the-ground wetland or riparian restoration component, and should include education, outreach, and community stewardship. Research, monitoring or planning by itself is not eligible, nor if mitigation is a requirement. Measurable ecological, educational, social and/or economic benefits should result from project completion. NWF Foundation or EPA are contacts for this program: www.nfwf.org or www.epa.gov.owow

For inquiries on Corps projects in New Mexico, contact: Corps of Engineers—ABQ District, Attn: Regulatory Branch, 4101 Jefferson Plaza NE, Albuquerque, New Mexico 87109-3435 (505) 342 3283 Or visit their wetsite: http://www.spa.usace.army.mil/reg/

## National Wildlife Refuges: Support Group Grant Program

Refuge Support Groups play a critical role in building community support for the National Wildlife Refuge System—which commemorates its 100th anniversary on March 14, 2003. The National Wildlife Refuge Support Group Grant Program encourages organizations to work with their local refuges and is a collaborative effort among several partners:

- US Fish and Wildlife Service;
- National Fish and Wildlife Foundation;
- National Audubon Society; and
- National Wildlife Refuge Association.

Proposals are accepted by the NFW Foundation for projects that assist organizations to be effective co-stewards within the National Wildlife Refuge System. Eligible applicants are non-profit 501(c) organizations (or those in the process of applying), including "Friends" groups, Cooperative and Interpretive Associations, Audubon Chapters, and other citizen organizations assisting a refuge, group of refuges, or the system as a whole. Applicants are encouraged to integrate the refuge system's centennial anniversary into their projects.

Competitive seed grants ($1,500—$5,000) may be awarded for:

- Start-up Grants—to assist new/starting refuge support groups with formative and/or initial operational support ($1,500 or less) such as membership drives, training (tuition), postage, brochure writing/layout, logo design, or consultant fees for planning a mission and strategic plan.
- Capacity Building Grants—to strengthen existing refuge support groups' capacity to be more effective, such as activities for outreach, strategic planning, membership development, board or leadership development, designing exhibits for community outreach, and training.
- Project Specific Grants—for a specific project, such as developing environmental curriculum and programs for local schools, habitat restoration projects, building an observation tower, interpretive signage, or Watchable Wildlife programs.

## NRCS, NACD & NFWF Partnership: Challenge Grants for Conservation

The Natural Resources Conservation Service (NRCS) and the National Association of Conservation Districts (NACD) are in partnership with the NFW Foundation—to support high quality projects which positively engage farmers and ranchers in conservation and enhancement of wildlife and natural resources on their lands. Specifically, the partnership seeks to leverage or compliment Farm Bill programs aimed at restoring and conserving fish/wildlife habitat on active agricultural operations.

Project pre-proposals can be submitted anytime, although reviewed twice annually; applicants should plan on submitting early. The NFW Foundation will award challenge grants, through a competitive process, to eligible grant recipients:

- Federal, state and local governments;
- Educational institutions and nonprofit organizations; and
- Entities in partnership with NRCS or local conservation districts (who will be given special consideration).

Although six priority geographic and/or programmatic areas have been identified, two may be relevant to New Mexico:

- Western Range and Riparian Systems—projects aimed at conservation and restoration of critical range and riparian habitats on private lands; and
- Reaching Under-served Communities—projects which seek to engage minority or limited resource farmers in efforts to promote conservation practices and economic sustainability.

For inquiries about National Association of Conservation District grant opportunities in New Mexico, contact:
National Fish and Wildlife Foundation
SW Regional Office
28 Second Street, 6th Floor
San Francisco, CA 94105
415-778-0999, or fax 415 778-0998

## NFW Foundation Partners with Federal Agencies

The Foundation's investments in innovative, collaborative solutions to conservation challenges are made possible with the continued support of its partners.

Federal partners work with the Foundation to secure funds for grant programs, identify worthy projects for funding consideration, assist in assessing project proposals, and act as the Foundation's eyes and ears by conducting project site visits and evaluating project success.

Federal agency cost share agreements exist with the:

- Agency for International Development;
- US Army Corps of Engineers;
- Bureau of Land Management;
- Bureau of Reclamation;
- Department of Defense;
- US Environmental Protection Agency;
- National Oceanic and Atmospheric Administration;
- National Park Service;
- US Forest Service;
- USDA—Natural Resources Conservation Service; and
- U.S. Fish and Wildlife Service.

For additional information on Challenge Grant opportunities, contact participating federal agencies or browse the Internet:
www.nfwf.org

## 'Poop & Stomp' Restores Cuba Mine Site

Support from the NM Environment Department (state lead for EPA's Section 319 grants) Bureau of Land Management has successfully assisted restoration of mine waste materials near Cuba. The Rio Puerco watershed is known to have a long history of problems, including runoff from the Nacimiento Copper Mine—until recently.

With the mine identified as a site needing major assistance, NMED was approached by an unusual non-profit organization, the Quivira Coalition (QC). Operating from the 'radical center'—as Executive Director Courtney White explains—it doesn't involve extremes, but looks at old ideas, science and collaboration to find solutions.

For this mine restoration, QC borrowed some cows to literally 'poop and stomp' the tailings to good health. Electric fencing was used to create paddocks, and the cows were fed bales of native hay—tossed on the steep mine slopes. As the cows fed, they ate, defecated and urinated, and literally worked the sides from top to bottom—pounding seeds, mulch, and 'cow-pie sized' nutrients into the tailings.

When the rains came, it was a huge success. Grasses now grow on these steep slopes, and this waste pile is far less of a threat to the watershed.

# EPA: Section 319 Partnership with States

Since 1990, Congress has provided grant funds to states under Section 319(h) of the Clean Water Act to help implement non-point source management programs. Non-point source (NPS) pollution is the contaminated runoff associated with agricultural, urban and other diffuse sources. The New Mexico Environment Department administers the State's Section 319 Program.

Any private or public entity, tribe, individual, federal or state agency, educational institution, or nonprofit entity is eligible to apply for funds. Proposals should focus on:

1. Measurable water quality improvements;
2. Extensive implementation of management measures or conservation practices; and
3. Addressing the cause rather than effect of a problem.

Recipients of Section 319 grants must provide a 40% match that is non-federal in origin, however, the match need not be in dollars. In-kind services such as labor and materials are valuable sources of matching funds. Eligible proposals may include:

- Implementation/demonstration of Best Management Practices (BMPs);
- Post-burn rehabilitation;
- Prevention of catastrophic wildfires;
- Reduction of erosion/sedimentation from rural roads, agricultural practices, etc.;
- Projects emphasizing riparian buffers;
- Improved awareness and/or management of urban runoff;
- Information/education of engineers and/or developers concerning BMPs;
- NPS education, outreach or symposia;
- Improvements in livestock management;
- Projects that restore floodplain function;
- Restoration of natural stream channel morphology; or
- Stream bank stabilization.

A few examples of New Mexico Section 319 projects are Bluewater Creek near Grants, the Children's Water Festival in Albuquerque, and the Santa Fe River. Partners include Tree NM, NM State Land Office, Navajo Nation, NM State Forestry, County Corrections, and volunteers.

For New Mexico Section 319 grants, contact NM Environment Department, 505-827-0187, or www.nmenv.state.nm.us/swqb

# BLM: Public Lands Stewardship

One of the Bureau of Land Management's initiatives is to enhance public land stewardship and improve watersheds by involving partnership with other Federal agencies. In the western states, these programs aim to conserve and restore streams, rivers, and creeks to their properly functioning condition BLM efforts also deal with such issues as the invasion of non-native plant species, the presence of livestock in streambeds, erosion, and water pollution.

On the environmental education level, BLM-New Mexico is actively involved in sponsoring programs around the State:

- Las Cruces—BLM visits schools to make presentations on wildlife, plants, water, geology, and archaeology.
- Fort Craig Archaeological Field School—BLM's annual event at a National Historic Site, for volunteers of all ages to learn and carry out archaeological excavations.
- Grants—BLM's Hug a Tree and Survive program, a slide/script presentation to help children (and adults) survive if lost.
- Taos—BLM presents programs on Hug-A-Tree, Projects Wild/Aquatic and Learning Tree, and Leave No Trace, at two recreation areas and upon request by communities/counties in northern NM.
- Socorro—BLM presents Project Learning Tree, WET (Water Education for Teachers), Project Archaeology, Project Wild, and other programs for teachers, youth group leaders and natural resource professionals. Also Bosque Conservation Days and Datil Conservation Days (a multi-disciplinary outdoor classroom series); and New Mexico State Olympiad (Nature Quest) for ages 12-18.
- Farmington—BLM sponsors both a science program and work experience for "at-risk" high school students.
- NM State Science and Engineering Fair.

For further information on BLM programs, contact the NM State Office, (505)438-7400, or their website: www.nm.blm.gov

# BOR & COE: Rio Grande Water Operations Review

Management of the Rio Grande involves many agencies, each with its own mission and set of rules and guidelines. Two federal agencies and one State entity have recently agreed to develop an integrated plan for water operations at their existing facilities—called the Upper Rio Grande Basin Water Operations Review—to improve how water is stored and delivered:

- the US Army Corps of Engineers (COE) is charged with flood loss reduction and sediment control.
- the US Bureau of Reclamation (BOR) primarily manages water delivery to private, municipal, and industrial users.
- the NM Interstate Stream Commission (NMISC) monitors Rio Grande Compact water deliveries and the San Juan-Chama Project water storage and releases.

While the Water Operations Review undergoes an Environmental Impact Statement, Technical Teams are focusing on several resources, as additional areas of concern and issues are identified both during and following public input. These resources include:

- recreation.
- water quality;
- aquatic systems;
- cultural resources;
- riparian and wetland ecosystems;
- river geomorphology, sedimentation and mechanics; and
- land use, socio-economics, and environmental justice.

Water operations under review include:

- reservoirs at Platoro, Abiquiu, Cochiti, Heron, Jemez Canyon, Elephant Butte and Caballo Lakes;
- the Low Flow Conveyance Channel; and
- the Closed Basin-San Luis Valley Project.

For additional information about the Upper Rio Grande Basin Water Operations Review: BOR—(505)248-5379, COE—(505)342-3348 NMISC—(505)841-9480, or visit their website: http://www.spa.usace.army.mil/urgwops/

# NRCS: Partnering with Conservation Districts

Formerly called the Soil Conservation Service (SCS), the Natural Resources Conservation Service (NRCS) provides technical assistance to landowners—in development of resource management systems that conserve soil, air, water, plant and animal resources. NRCS employs soil scientists, plant scientists and engineers that can provide assistance in identifying, restoring, enhancing and creating wetlands and their habitats.

Technical assistance—for local Soil and Water Conservation Districts, landowners and land users, such as ranchers and farmers—is provided by NRCS staff and numerous other agencies (county government, the State Department of Agriculture, and university extension agents). Conservation districts are a state entity, that assist agricultural endeavors in every county of the State. New Mexico has 47 districts, and their purpose is a direct reflection of their name—soil and water conservation.

Any member of the public may request information and technical assistance from the conservation district. Often local farmers and other landowners will inquire about wetlands and their stewardship responsibilities. Copies of detailed soil maps for each county are maintained in district offices for use by the public, and often include wetland inventory maps. Otherwise, the US Fish and Wildlife Service can provide wetlands maps. Another cooperating conservation agency is the New Mexico Forestry Division, who operates a Tree Seedling Program for stewardship projects.

For further information on NRCS programs, contact your local conservation district, NRCS, State Cooperative Extension office, Farm Service Agency, or browse the Internet: www.nrcs.usda.gov

## SWCD Brings Project WET to NM Communities

As New Mexico's 47 Soil & Water Conservation Districts work with private landowners to rehabilitate and enhance wetlands and riparian areas, it becomes important to educate youth about these opportunities

Luckily, in 1999, a unique partnering opportunity occurred among the State's Soil and Water Conservation Districts (SWCDs), the NM Environment Department, and EPA. Tierra y Montes SWCD (Las Vegas area) received a federal wetlands grant to promote youth environmental stewardship throughout New Mexico.

Under the leadership of Wendy Easton, Tierra y Montes District Manager, employees of New Mexico's SWCDs were trained in the curriculum for Project WET (Water Education for Teachers)—thereby becoming "teachers"— and assisting others to develop environmental programs in their respective communities and schools.

A few years earlier—in 1997 and almost by chance—Easton was the first "non-teacher" to be trained in Project WET, which allowed her to instruct Las Vegas area teachers and students in elementary, middle and high school. Since then, her vision has grown—encouraging the State's six SWCD Regional offices to join in the effort—to increase awareness of water resource programs and practices throughout New Mexico.

For Project WET trainings in your area, contact your local Soil and Water Conservation District, or www.werc.net/educators/project_wet.htm

## Southwestern Willow Flycatchers Thrive on Ranch

Endangered species are a major issue on the U Bar Ranch in southwestern New Mexico, where private lands are often grazed and/or farmed along a nine-mile reach of the Gila River. Coincidence or not, the land is nesting habitat for the largest known population of Southwestern Willow Flycatchers, plus the river supports large numbers of Spike Dace and Loach Minnow—federally listed endangered species.

On the Gila National Forest—upstream and downstream of U Bar land—cattle have been excluded from riparian areas on behalf of endangered species. To date, these populations have not been found on the Forest. However, the grazed and farmed lands have seen a three-fold increase in Willow Flycatchers since surveys began in 1994. (64 breeding pairs increased to 186 after four years of study.)

Since this research used US Fish & Wildlife Service protocol, the federal agency could not dispute the improvements. Of course, the results challenged several common notions about the bird's habitat needs, while further documenting that grazing and farming were *not* threatening endangered species. On the contrary, these activities may be beneficial.

Since then, the U Bar has partnered with scientists from the Rocky Mountain Research Station and Western New Mexico University to conduct detailed research. It appears that Willow Flycatchers may prefer habitats modified by grazing and farming activities.

On the U Bar Ranch, grazing occurs usually in the dormant season with farm work minimized during the birds' nesting season.

# Success Stories in Wetland & Riparian Habitats:

## US Forest Service: Rocky Mtn Research Station

Research gathered by Forest Service Research Stations also serves other federal, state, local and even international organizations, as well as private entities and individuals. Research Stations coordinate their programs with other government agencies, universities and institutions so that scientists may cooperate with researchers and resource managers—to accelerate solutions to a wide range of natural resource related issues.

The Riparian Research Unit in Flagstaff, AZ has been developing new methods of restoring functions and processes to degraded stream systems. This work is entitled "Restoration of Stream Functions Using Riffle Formations". Additional research is being conducted to:

- identify the role of woody plants in maintaining stream functions;
- develop re-vegetation techniques;
- understand hydrology and geomorphology's role in improving vegetative conditions; and
- Determine effects of ungulates and other disturbance factors on riparian and wetland ecosystems.

In Albuquerque, NM, Forestry Sciences Laboratory is conducting research entitled "Ecology, Diversity, and Sustainability of Soil, Plant, Animal, and Human Resources of the Rio Grande Basin". Scientists on this project are working to maintain the diversity of native grasses, shrublands, woodlands, and forests in the Rio Grande Basin of New Mexico.
Studies are helping determine past and present processes of, and linkages between, watersheds and floodplains of the Rio Grande. The overall focus is understanding how human use of the Basin's upland environments affect overall ecosystem functioning and structure.

Recent New Mexico publications address:

- the Rio Grande Basin's environmental history;
- history of irrigation in the Middle Rio Grande;
- use of exotic and native plants by stopover migrating birds; and
- an interdisciplinary approach to modeling anthropogenic landscapes and 7,000 years of human occupation in the Rio del Oso Valley of northern New Mexico.

For information on Research Station projects, contact the US Forest Service or www.fs.fed.us

## National Riparian Team Visits New Mexico

The National Riparian Team (a cadre of Forest Service and BLM riparian experts) has taken interest in New Mexico. Co-hosted by the USDA Jornada Experimental Range at NMSU and the non-profit Quivira Coalition, the National Riparian Team arrived in May 2000 to conduct a three-day workshop in Silver City.

Workshop participants were a diverse group:

- ranchers;
- a forest supervisor;
- Jornada Experimental Range scientists;
- the New Mexico cadre of the National Riparian Team;
- land managers from the State Land Office and Bureau of Indian Affairs;
- biologists from the State, Forest Service, and Middle Rio Grande Conservancy District; and
- members of the Sierra Club, Nature Conservancy, Southwest Center for Biological Diversity, and Upper Gila Watershed Coalition.

One day was spent inside looking at slides and listening to scientists—from the BLM and Forest Service—explain hydrology, ecology, grazing, and proper stream function. Then a day was spent outdoors evaluating one stretch of the Mimbres River, and a second day on Macho Creek putting their new-found knowledge to work—installing electric fencing in a degraded riparian area. A couple of miles downstream of the Macho Creek demonstration project, neighbor Jim Winder has been able to increase forage capacity ten-fold and the river has begun to flow again—by fencing it off and grazing the dormant season.

Overall, the workshop was a very successful blend of science, dialogue, learning, looking, and listening. Collegiality ruled as people with diverse backgrounds set aside differences and concentrated on how to heal the land for multiple benefits. Guided by science, participants learned that there are practical, innovative solutions to the riparian problem. It's just a matter of taking the time to learn.

For more on Jornada Experiment Station programs contact (505) 646 4842, or visit their website: www.usda- ars.nmsu.edu/

# US Forest Service: Collaborative Stewardship Program

Peñasco is representative of northern New Mexico and some of the oldest Hispano villages in the region. The village is also home for the Camino Real District of the Carson National Forest, a 1998 recipient of one of only ten *Innovations in Government Awards*—from the Kennedy School of Government at Harvard University—including a $100,000 grant for its innovative approach to get the work done.

District employees developed their Collaborative Stewardship Program, partly in recognition of unique local history and economic circumstances, and partly because they were tired of the perpetual adversarial relationships with local forest users—many of them friends and neighbors. The district has not changed forest management goals, only methods to accomplish those goals—in partnership with local communities, rather than the typical top-down imposition of policy.

Forest management projects are designed to enhance the ecosystem and biodiversity while providing resources and income for community members. Cooperative agreements with the Forest Trust, La Montaña de Truchas Woodlot, the Santa Barbara Grazing Association, and the Valle Grande Grass Bank have produced successful thinning and restoration projects, while benefiting local ranchers and villagers who rely on fuel wood and other forest resources.

Ranchers, conservationists, and agencies are working together in collaborative problem-solving—for the collective good of the land and the people who rely on it. This approach bridges ideological gaps, explores common ground, and although it requires slow and patient work to build relationships, it has since become part of official policy.

The Camino Real District has since asked the Quivira Coalition to help organize an "Unconference" on Collaborative Stewardship At Work—to spread the news and help increase its use. In response, the Taos, NM, event of April 27-28, 2001, focused on three topics vital to the future of the region's communities: *Water, Timber, and Grazing*.

Although nearly 30 years later, District Ranger Cecilia Seesholtz says that the Collaborative Stewardship Program is finally implementing recommendations of the 1968 Hassell Report and 1972 Northern New Mexico Policy directive, which outlined 99 policy recommendations to better serve local communities.

**The rich diversity of the world's cultures reflects a corresponding diversity in the wilds that gave them birth.**
**Aldo Leopold**

The 1968 Hassell Report was motivated by violent and high-profile protests regarding the loss of land grants, compounded by forest policies that cut grazing and discontinued free-use permits—contrary to traditional uses of the forests before the Forest Service gained control of these lands in the early 1900s. Forest Service Supervisor William Hurst stated in the 1972 Northern New Mexico Policy directive:

> "the Forest Service as an organization can contribute most effectively to many of the economic and social needs of the people of Northern New Mexico." …."the uniqueness and value of the Spanish American and Indian cultures in the Southwest must be recognized and efforts of the Forest Service must be directed toward their preservation."

For more on public lands ranching in Northern NM, contact The Quivira Coalition: 505 820-2544 or 955-8922 (fax). Ask about their publication: *Of Land and Culture: Environmental Justice and Public Lands Ranching in Northern New Mexico, by Ernest Atencio.* www.quiviracoalition.org

## Valle Grande Grass Bank

The Valle Grande Grass Bank, near Pecos, is a project of The Conservation Fund and designed to keep northern New Mexico family ranches in business while giving the "home allotment" a rest from livestock grazing.

The Grass Bank principle is simple: National Forest permittees move cows on to the Grass Bank (back-up allotment) for a few years. During this time, the home allotment is rested and grows a crop of grass for controlled burns, while other practices are implemented—brush control, fencing, reseeding, and riparian enhancement.

It involves a strong partnership of organizations: The Conservation Fund, Santa Barbara Grazing Association permittees, Northern NM Stockman's Association, Rio Pueblo/Rio Embudo Watershed Protection Coalition, Quivira Coalition, NMSU Cooperative Extension Service, NM Environment Department, and US Forest Service.

Why is this necessary? Historically in the Southwest, there has been a steady encroachment of trees and shrubs into grassland areas. Reasons include past grazing practices, fire suppression, and likely, climate change—all contributing to a loss of grazing capacity. This creates problems for public lands' permittees and land management agencies responsible for maintaining the health of public lands.

In addition, regulations and court decisions—to enforce environmental laws—place increased pressures on both public land managers and permittees. Grass Banks are a viable response.

## History of Beavers in the Southwest

Historically, beaver (*Castor canadensis*) were found on most Southwestern streams and played a very important role in regulating watersheds on this continent. Prior to European settlement, estimates indicate between 60 and 400 million beavers lived in North America—10 beavers/square mile in primary wetland/riparian habitats—contributing to higher water tables, lowered evaporation rates, and surface water availability year-round.

Early explorers described lush riparian systems and abundant water in the streams, yet beaver were nearly exterminated by the late 1800s due to over-trapping for eastern markets (hats, coats and fur collars). In the 1820s, the Hudson Bay Company adopted a policy of deliberately over-trapping beavers in areas bordering the Pacific Northwest—in an attempt to discourage Russian, French, and Spanish trappers from attempting to claim territory that the Hudson Bay Company wanted to control.

In the newly formed Republic of Mexico (1821), the Santa Fe Trail was opened—from Topeka, Kansas to Nuevo México—and during the 1820s and 1830s, the towns of Taos and Santa Fe became regional fur centers (for the entire West). The nearby Sangre de Cristos mountains were later stripped of their beavers.

Overall, the Hudson Bay policy was successful—the US seized significant Mexican land-holdings throughout the West in the 1840s—while beavers continued to be removed from these riparian systems. By 1897, the New Mexico Territorial Legislature prohibited the taking of beavers, as did many states.

## Santa Ana Pueblo Reclaims Marsh for Resort Hotel

The biodiversity of Southwestern riparian habitats have been noticeably altered due to conditions that promoted the introduction and spread of Salt cedar (also known as *Tamarix*). Coincidentally, cultural, economic and hydrologic events—including intentional planting for erosion control—allowed Salt cedar to spread in New Mexico.

With the severe floods of 1941, Salt cedar took hold along the middle Rio Grande—including the Pueblo of Santa Ana in central New Mexico. Historically the vegetation in the Pueblo's 100-year floodplain was marshy habitat with saltgrass—not just a cottonwood bosque (forest)—although some wet meadows and ponds were present. After the floods, dense thickets of undesirable (non-native) plants formed in areas previously occupied by salt tolerant grass and riparian shrub communities. Soon afterwards, metal Jetty Jax structures were introduced.

In 1999, nearly a half century later, Santa Ana Pueblo began construction of an $80 million resort hotel—and its primary views cape was 115 acres of degraded riparian habitat. Something very significant had to be done:

- Jetty Jax were removed, and monitoring wells and vegetation transects installed;
- invasive species of Russian olive and Salt cedar were either burned, or mechanically removed and mulched;
- stumps were cut and herbicides applied in winter to avoid harming migrating birds;
- clay soils were "deep-ripped" with a slip plow and agricultural gypsum applied (to balance high salt content) so plants could be grown;
- permanent sprinkler irrigation was installed on 65 acres, and salts leeched down below the root zone—prior to seeding with salt tolerant native grasses; and
- cottonwood poles and willows were planted.

Overall cost was $1.5 million dollars, plus unexpected soil amendments at $400-500 per acre. Partnering with others was important and included: Bureau of Reclamation, US Army Corps of Engineers, Bureau of Indian Affairs, US Fish and Wildlife Service, EPA, New Mexico State University, University of New Mexico, youth environmental educator Mary Steuver, and Santa Ana Pueblo tribal elders.

## Beavers Are Partners on Zuni Indian Lands

In the semi-arid high desert of the Colorado Plateau, the Zuni Indians of New Mexico have long known the value of healthy riparian areas—lakes, wetlands, and springs. Aboriginal Zuni land once occupied more than 20 million acres in northern Arizona and New Mexico. Today's Zuni Reservation—covers nearly 600,000 acres in these two states—and all springs and seeps are known and named, with many held sacred. Some of the most important plants and animals in Zuni culture and religion are riparian dependant.

From a biological viewpoint these riparian areas offer some of the best biodiversity in the region—far greater than in surrounding uplands. The Zuni Fish and Wildlife Department has begun a comprehensive program of wetland and riparian restoration:

- fencing wetlands while providing alternative water sources for cattle;
- removing non-native plants; and
- replanting native vegetation along streams and wetlands.

An important and innovative component of this program is the use of beavers to restore riparian habitat—an animal that was almost exterminated in the West by the late 1800s. Zuni Pueblo believes selective translocation of these animals into degraded watersheds will have beneficial effects on water quality, watershed health, and riparian wildlife habitat. Characteristics looked for in a release site are:

- some available water lasting into early summer—so arroyos are viable sites;
- enough cattails and/or willows or other woody vegetation for beavers to eat; and
- an area with potential to provide the greatest benefit to wildlife—close to other suitable habitat or what was once high quality habitat.

To date twenty-three beavers have been relocated into seven riparian rehabilitation areas—averaging three beavers per site. Within a short time, the beavers began building dams, holding back water, and within three to five years, remarkable changes are evident:

- improved hydrology as plants become established and erosion is reduced;
- Willow Flycatchers arrive to build nests;
- Salt cedar infestation is reduced; and
- educational opportunities for Zuni youth.

# New Mexico's Bill Zeedyk Pioneers Induced Meandering

The Hubbel Trading Post, a National Historic Site at Ganado, Arizona, has been in existence since 1876 and continues to serve local residents—although owned and managed in recent decades by the National Park Service as an in-holding within the Navajo Nation. This site is home for an on-going riparian restoration project that combines the forces of Nature (water at flood stages) with simple man-made in-stream structures, called baffles and riffles.

Since beginning restoration of the Pueblo Colorado Wash in 1997, results have been impressive over four years of study—starting with intermittent flow and three permanent pools, to perennial flow with over nineteen pools. The most important concept to remember: increased sinuosity supports the natural reintroduction of native vegetation.

Induced Meandering is the name Bill Zeedyk, retired US Forest Service Biologist, gives his newly described riparian restoration practice that modifies the shape and dimensions of incised channels—restoring function to degraded riparian system, including arroyos in the arid southwest. Besides bringing life back to eroding river systems, the technique's hand labor requirements may provide social, economic, historic, and aesthetic advantages:

- opportunities to use local labor;
- avoids heavy equipment and foreign materials;
- reliability of using native materials (rocks and wooden stakes) to build baffles and riffles; and
- provides opportunities to learn about land stewardship practices.

Support for Zeedyk's ideas prompted at least fourteen governmental and nonprofit entities in Arizona and New Mexico to participate in this effort—with principal funding from the Arizona Water Protection Fund and National Park Service. Restoration goals focused on:

- restore channel stability, increase sinuosity, and stop down-cutting of the channel;
- re-establish appropriate meander pattern, pool/riffle ratio and floodplain, and raise the groundwater elevation;
- remove trespass grazing in the riparian areas;
- remove exotic vegetation, replacing it with native/historically appropriate species;
- monitor change in channel morphology, groundwater, water quantity/quality and vegetation—in response to treatment;
- collaborate with tribal government, local/state/federal agencies, and non-profit groups; and
- promote conservation education/demonstration.

Zeedyk is putting stream channel classification techniques of Dave Rosgen and Luna Leopold to new use—applying principles and theory—and lets the stream (not the machine) do the work! Rosgen protocol typically requires grade control and bank stabilization, and might shape the channel with heavy equipment to create a proper channel—in stable form and dimension. In contrast, Zeedyk uses Rosgen principles "in phases", and gradually transitions toward the desired stable system. (Zeedyk's trade off is more time and uncertainty for less capital costs.) His technique relies partially on chance—hoping the next snow melt or rain event will cooperate—but not be too forceful.

Management objectives and design criteria conform to Rosgen channel-type concepts, methodology, and parameters. A key component of Induced Meandering is bio-engineering—with in-stream baffles and riffles—to promote the selective introduction or removal of stream bank vegetation to accelerate bank forming processes. Zeedyk places baffles and riffles, or riffle weirs, according to geomorphologic principles—so that meanders, channel width and channel slope will develop as expected, yet over time (with each heavy rain or flood event).

Baffles deflect flows; rifles control bed elevation and pool depths; and vegetation planting/removal increases or reduces erosion resistance on banks—thereby assisting removal of sediments and promoting their deposition in the next meander. When rains do arrive, soils are moved from the concave bank—and redeposited on the convex bank or in the channel—creating point bars, riffles, and a floodplain that are representative of a stream system returning to a healthier state. The end result: Zeedyk's technique induces floodplain development, and lets the river do the work!

Riffle (foreground) and baffle/point bar (midground)

## Baffles and Riffles

The Induced Meandering technique uses baffles and riffles to facilitate erosive action—which develops sinuosity (curves) in an evolving floodplain. It avoids the use of excavating machinery, since a key component of Induced Meandering is bio-engineering—the selective introduction or removal of stream bank vegetation/soils to promote change.

As sinuosity increases in the stream, native vegetation establishes itself naturally on point bars because of more favorable seedbed and moisture conditions. This in turn promotes more native vegetation, and the cycle continues.

Induced Meandering is recommended for incised channels only—specifically Rosgen channel-types G and F— with grades of less than four percent. However, channel response to installation of baffle and riffle structures is variable, and with both, rocks and stakes are placed in the stream course. Stakes are pounded in among rocks vertically to improve shear stress resistance.

Riffles are linear design (e.g. low profile row of rocks/stakes) and span the channel's width—to control stream bed elevation, channel slope and pool depth while enabling free passage of bedload. Riffles are installed midway between baffles, and the use of stakes helps capture more rocks.

Baffles are also low—a triangular profile deflecting stream current into the opposite bank. Baffles occupy 40-70 percent of the channel's width—and capture rock, sediment, seed and plant propagules in response to flood events.

Low flow is not down time, but maximizes the growth of riparian vegetation. The simple act of naturally reintroducing grasses in a stream channel can stop Salt cedar from becoming re-established.

For more information, contact Bill Zeedyk at (505) 281-2613.

## Land Trust Conservation

Several Land Trusts have found a home in New Mexico, to preserve and protect the legacy of western tradition—open land, family agriculture, historical and cultural values, and natural beauty:

Southern Rockies Agricultural Land Trust was founded by New Mexico Ranchers who recognize the need to protect natural landscapes and ranching traditions from urban development—by using conservation easements and helping ranchers improve profitability. (505-354-2379, Sid Goodloe)

City of Albuquerque Open Space Program—since 1969 has acquired over 16,000 acres of open space and manages another 7,000 acres to provide farmlands for visiting wildlife and people, conserve natural and archaeological resources, provide opportunities for outdoor education and low impact recreation, and define the edges of the urban environment. Funding is provided from General Obligation Bonds, NM gross receipts taxes and federal grants. (505-873-6620)

Partner Land Trust—created to protect rural areas from subdivision and fill the gap left by existing local and national land trusts, who are not interested in small, isolated rural agricultural or wildlife habitat land parcels. (partners_land@plateauel.net or 505-421-2998, M. Diane)

Taos Land Trust—was established in 1991 to secure conservation easements in Taos County and northern NM, protecting important scenic and agricultural lands, and wildlife habitat. Their most recent acquisition is Phase 1 of the Taos Valley Overlook, thanks to a $4 million dollar Congressional appropriation. (www.taoslandtrust.org or 505-751-1189)

# Quivira Coalition: New Ranch Handbook

The New Ranch Conference—held March 10, 2001, in Las Cruces, NM—launched the Quivira Coalition's release of a new publication: *"The New Ranch Handbook: A Guide to Restoring Western Rangelands."* Substantial funding for production of the *Handbook* was provided by Thaw Charitable Trust and the National Fish and Wildlife Foundation.

Quivira Coalition is a non-profit organization, dedicated to resolving the so-called "rangeland conflict" through common sense and grassroots collaboration. Central to their goal is spreading the word that ecologically healthy rangeland and economically robust ranches can be compatible.

The original idea for this *Handbook* belongs to innovative New Mexico rancher, Jim Winder, and an highly talented Jornada Range scientist, Dr. Kris Havstad. Authored by Nathan F. Sayre (Ph.D. candidate at the University of Arizona), and edited by Barbara H. Johnson (Quivira Coalition), the *Handbook* portrays successful ranches in New Mexico, Arizona and Colorado. Incorporating science and environmental practices, these stories demonstrate ecological principles of Quivira Coalition's New Ranch concept—the "radical center" of ranching.

The term radical center—coined by Arizona rancher Bill McDonald—"doesn't involve extremes, but looks at old ideas, science and collaboration." The key issue is not whether grazing occurs, but how it is managed. Since livestock grazing is a disturbance that can be managed—for the benefit of wildlife, riparian areas, water, and livestock—the effects of these disturbances on the land are therefore dependant on three critical factors:

- timing (when they happen);
- intensity (how severe they are); and
- frequency (how often they recur).

The subtitle " Restoring Western Rangelands" refers to conserving, restoring, and/or enhancing the basic ecological processes and functions that support rangeland health: soil stability, watershed function, nutrient and energy flows, and resistance and resilience to disturbance. Healthy rangelands, thus defined, are beneficial to wildlife, biological diversity, water quality and quantity, and livestock alike.

The *Handbook* therefore targets four goals:

*1. To describe management practices that have succeeded in improving both the conservation values and the economic sustainability of a handful of ranches in the arid and semiarid Southwest.* The described practices do not add up to any single blueprint or recipe for successful management. The lesson is: management must be flexible and attentive to the particular circumstances of each ranch's landscape and conditions.

*2. To situate these management practices in a framework of scientific research that helps to explain their success.* Arid and semiarid rangelands are complex ecosystems, and defy some central ideas of classic ecological theory. Scientific models have been developed in recent decades, yet many details are still poorly or incompletely understood. Therefore, several key ecological processes have been scientifically described—the flow of energy, the cycling of water, and the cycling of nutrients—and are the basis for understanding the science of the New Ranch.

*3. To offer a common vocabulary and set of concepts for ranchers, scientists, agency officials, and environmentalists to use in addressing rangeland issues.* All these groups share a concern for the land, but all too often lack a common language to communicate their views and resolve their differences.

*4. To increase awareness of the complexity and difficulty of managing rangelands well.* No one group—public or private, consumptive or non-consumptive—has a monopoly on good stewardship. The people who manage land well should be recognized and supported no matter what their backgrounds may be. It is hard work and when done well, benefits all.

For further information on the New Ranch, contact The Quivira Coalition:
505-820-2544 or 955-8922 (fax)
551 Cordova Rd, #423, Santa Fe, NM 87501
or visit their website: www.quiviracoalition.org

# NM Riparian Council:
## Success Stories Conference

"Success Stories in Riparian, Wetland and Watershed Habitats" were highlighted at the NM Riparian Council's Conference of March 23, 2001. With major funding provided by the Bureau of Reclamation, several agencies and non-profit groups co-sponsored the event held at Santa Ana Pueblo's Prairie Star Restaurant.

The keynote presentation was delivered by Sid Goodloe, owner/steward of Carrizo Valley Ranch and past-President of NMRC, who related experiences in restoring riparian habitats on his ranch—including successful efforts at renewing watershed health on lands damaged by misguided grazing and fire-control policies of the past. He told of benefits and rewards derived from forty years of striving toward improved land management practices while sharing his vision for the future—rangeland health can improve and ranching can be a profitable lifestyle, even if neighbors don't approve of holistic methods. His key to keeping riparian zones functioning is simple, and modeled after wisdom of the 1600 B.C. Emperor of China: *"To protect your rivers, protect your mountains."*

Other informative presentations included :

- Santa Ana Pueblo—re-vegetation of a formerly exotics-dominated bosque having sodic (salty) wet soil habitats;
- Quivira Coalition—three demonstrations of growing grass on the New Ranch: usefulness of dormant season grazing in riparian areas; "Poop-and-Stomp" technology on mine waste;
- USDA Forest Service—watershed health and restoration projects on Largo/Agua Fria Creeks, with Catron County community involvement and multi-agency sponsorship;
- UNM Community & Regional Planning Program—transfer of real estate development rights from historic La Cienega community to save unique riparian landscapes.
- Natural Resources Conservation Service—an overview of Mountainair community involvement in the health of the Abo Watershed;
- US Forest Service—Jemez Ranger District and Pueblo of Jemez cooperated with the New Mexico Habitat Stamp Program to enhance local recreation and riparian areas;
- Bill Zeedyk—the Induced Meandering technique to restore incised stream channels;
- Albuquerque Open Space Division— wetlands creation and protection on Open Space lands.

For more information on the NM Riparian Council , call: 505 452-5211 or 255-7156

# NM Watershed Coalition:
## Gallegos Canyon Watershed

The Gallegos Canyon Watershed Enhancement Project is a watershed outreach/demonstration project of the non-profit New Mexico Watershed Coalition—whose mission is to support locally-led watershed efforts in New Mexico. The project covers portions of Bernalillo, Santa Fe and Torrance counties—and is funded through joint efforts of the Natural Resources Conservation Service, New Mexico Soil and Water Conservation Districts Office, and Edgewood Soil and Water Conservation District.

Goals of the Gallegos Canyon Project are:

- local community, resident, and landowner participation;
- public education and outreach regarding watershed conservation activities;
- monitoring, plus project participation/ involvement with local schools;
- Conservation/restoration techniques and demonstrations; and
- Watershed Protection Plan development.

The Gallegos Canyon Watershed covers over 40,000 acres in the west-central portion of the Edgewood Soil and Water Conservation District (SWCD). This watershed is believed to be a possible critical recharge for the Estancia Underground Basin—the main source of groundwater in the East Mountains. The watershed's main drainages/waterways are ephemeral and perennial flows of: Canada de Escabosa, Arroyo de San Jose, Arroyo de Ysarri, and their minor drainages and tributaries.

The New Mexico Watershed Coalition was founded in September 1997 in response to discussions among members of organized watershed groups and conservationists. The Coalition promotes activities to help the landscape—by considering how our activities impact our surroundings and promoting efforts to live within parameters dictated by our environment. Some possibilities that may benefit watershed health and conserve water are tree thinning, wind rows, and plantings to prevent erosion.

Annual conferences are held on current topics such as: keys to creating/maintaining healthy watersheds, runoff following forest fires, ecologically sound grazing strategies, and legislative initiatives, plus tours of local projects.

For more information on Gallegos Canyon, contact the Edgewood SWCD: (505)286-7700

# Protecting Riparian Areas on National Forests

Staff of the US Forest Service and NM Environment Department (Surface Water Quality Bureau), in cooperation with Forest Service permittees (ranchers) are implementing Best Management Practices (BMPs) on forest lands. Partially funded by EPA's Section 319(h) Program, this Range Management Strategy focuses on improving New Mexico's water quality by protecting watersheds and their riparian environments.

Forest Service permittees, volunteers and agency staff are constructing range improvements and implementing BMPs, such as:

- wildlife ponds;
- sectional fencing;
- rotational grazing;
- riparian fencing;
- willow pole plantings;
- trick tanks; and
- check dams.

Their purpose is to divert livestock away from riparian environments and into uplands containing lush grasses stands, previously unused by livestock. Grazing of these grasses will decrease future fire danger during dry periods. Permittees are also placing cake and salt blocks in uplands, away from perennial waters, to keep livestock from the riparian areas.

Project locations are on the following National Forests:

- Santa Fe—Rito Peñas Negras Allotment (Cuba Ranger District), and Jarosa Allotment (Coyote Ranger District); and
- Carson—Alamosa, Jarita Mesa, Jarocita and Escondido Allotments (El Rito Ranger District).

## NM Workshop Evaluates Wetland Assessment

A two-day field workshop was sponsored in October 1999—by the New Mexico Natural Heritage Program (NMNHP, of the UNM Biology Department), and the Surface Water Quality Bureau (NM Environment Department). Major funding was provided by EPA to generate input for the development of a statewide GIS database—to track the status of wetlands and riparian sites. NMNHP also promoted this workshop to further 1998 goals of the NM Riparian Council—to increase communication among people working in riparian systems.

Participation was solicited from professionals knowledgeable of wetland/riparian and aquatic assessment techniques used around the State. Although several methods are common to the western US, the workshop focused on four that have, or potentially have, broad application in New Mexico.

Attendees briefly presented overviews of their assessment approaches, allowing open discussion to identify critical parameters common to most of these methods, plus identify strengths and weaknesses. Information was gathered to assist design of the Wetlands GIS and databases. (See next sidebar—NM Wetlands GIS.)

The general sense was that a satisfactory approach to synthesize all techniques is not likely, nor necessarily desirable. Agency goals and timeframes are likely best served by a variety of methods, not just one. However, techniques must be multi/interdisciplinary, and include hydrology, vegetation, soils, and landscape analyses in an understandable, yet not necessarily simplistic framework. They must be accountable and effectively address conservation/restoration issues in wetland/riparian ecosystems.

# Applicable Wetland Assessment Techniques:

Many federal, state, and local agencies, private organizations and landowners are charged with stewardship of the State's wetland/riparian areas. As objectives of these organizations are diverse, so are methodologies used to collect information and manage these sensitive areas. A discussion follows on four relevant methods, having much in common with respect to parameters considered, but differing with regards to levels of precision and goals.

- Proper Functioning Condition;
- HGM Assessment of Wetland Functions;
- Greenline Surveys and Related Monitoring Tools; and
- Heritage Site Biodiversity Ranking System.

## Proper Functioning Condition (PFC)

The most widely used riparian assessment tool by land management agencies, particularly the Bureau of Land Management and US Forest Service, is PFC (Proper Functioning Condition). With PFC, riparian-wetland functionality means channel stability, less erosion, good water quality, good water availability, forage, and fish and wildlife habitat. Accordingly, PFC measures how vegetation, landform and woody debris dissipate stream energy, filter sediment, aid groundwater recharge and floodplain development, stabilize steambanks, and maintain channel characteristics. There are seventeen measures for lotic systems and twenty for lentic systems that result in categorizing wetland/riparian areas as either:

- *functional* (needing minimal management intervention);
- *functional—at risk* (restorable, but needing immediate management intervention); or
- *nonfunctional* (not restorable without major intervention).

Properly used, PFC relies on expert opinion and an interdisciplinary team approach (3-5 members) to efficiently address these selected sets of functional characteristics—with a minimum reliance on acquisition of new quantitative data. The priority is to identify "at risk" wetland/riparian sites that are restorable with a modicum of management intervention before becoming completely nonfunctional. The general philosophy is that non-functioning sites are not worth the effort to restore.

There are several concerns about the actual application of PFC in New Mexico:

- As one leader in riparian assessment states, *"PFC is only as good as the group doing it."* Many PFC assessments are done with only one or two people making the field visits; this negates the process. There is a need for professionals to take the assessment more seriously and to "follow the real rules."
- Many drier riparian areas in New Mexico do not fit the PFC definition of "riparian" - having 30 consecutive days of flow. Therefore, PFC may need to be modified to include ephemeral (seasonal) situations. Furthermore, upper watershed practices can alter stream flow, and should be considered in determining the potential for consecutive days of flow.
- PFC is a tool designed to identify one category of streams for restoration. Although the technique identifies serious problems in a watershed, it does not quantify less serious problems. For example: a relatively healthy riparian ecosystem may receive a "functional" rating, yet have serious ecological problems such as exotic species invasion. Commentary by the PFC team is discretionary with no explicit guidelines for inclusion. So sites with the greatest hope for recovery are a priority, at the expense of good (functional) sites in a downward trend—currently not a priority with PFC.

Overall, PFC is not intended to be a comprehensive, detailed evaluation and monitoring methodology. It is a triage approach for recognizing "at-risk" sites based on a special set of functional criteria—then targeting them for immediate management intervention. TWALK (Tarzwell Watershed Area Link) is an appropriate follow-up on stream health that is used for "at risk" areas identified with PFC. TWALK addresses regulatory questions through a quantitative analysis of riparian conditions.

## HGM Assessment of Wetland Functions

The Hydrogeomorphic Approach was developed by the US Army Corps of Engineers Waterways Experiment Station, and views functionality in a similar way as PFC but with a somewhat broader scope. In many states, the Corps of Engineers, EPA, and a few other federal agencies lean on the HGM assessment of wetland functions as the main riparian assessment tool. In New Mexico, it is not currently used.

The HGM approach organizes wetlands to reflect their functions rather than dominant vegetation. HGM consists of three parts: hydrogeomorphic classification; model development and classification; and model application. The process includes assembling data, building functional assessment models, and applying them. Teams of various natural resource experts develop the models, and high priority systems can be targeted for initial model development.

The set of models evaluate how wetlands:

1. Temporarily store surface water;
2. Store and convey subsurface water;
3. Cycle nutrients;
4. Remove/sequester elements and compounds;
5. Retain particulates;
6. Export organic carbon;
7. Provide environments for native plant communities; and
8. Provide wildlife habitat.

The HGM models use a large suite of variables and data from reference sites to derive Functional Capacity Indices (FCIs) corresponding to each wetland function. "FCIs are scaled from 0.0 to 1.0, so a given disturbed wetland might be found to function at the 0.5 level, or at 50% of potential for a particular function." The emphasis on functionality in relation to water quality reflects HGM's roots in the Clean Water Act's Section 404 Regulatory Program, but over time it has grown beyond impact assessment and mitigation, to a general wetland/riparian management tool.

## Greenline Surveys and Related Monitoring Tools

Greenline Surveys and related vegetation monitoring tools were developed by the US Forest Service for riparian areas. Greenline Surveys refer to reference conditions (Potential Natural Communities), but are less intensive with respect to data acquisition—whereas HGM and Heritage techniques refer directly to detailed quantitative reference data sets for a given ecosystem type.

In contrast to HGM, Greenline Surveys and the Heritage Ranking System view functionality more in terms of maintenance of vegetation communities. Vegetation pattern and composition are seen as integrators of processes and physical attributes, and are a reflection of overall condition of a wetland/riparian site.

With Greenline Surveys and associated monitoring methods, condition is framed in terms of either successional status, or departure from desired condition based on expected natural community expression in a wetland/riparian complex. In addition, the Greenline transects are intended to evaluate bank stability. Using step transect data, status and stability ratings are computed and then evaluated against standards set for the general area being studied.

As necessary, management is adjusted to meet these standards. Greenline sampling is fundamentally intended to be an efficient and cost effective monitoring methodology to track change in wetland/riparian complexes.

## Heritage Site Biodiversity Ranking System

Developed by UNM's New Mexico Natural Heritage Program, the goals of the Heritage Ranking System are somewhat different: conservation and enhancement of wetland/riparian biodiversity. Hence, measures focus on evaluating the composition and status of biodiversity at a site in local, landscape, and global contexts. The objective is to determine a site's biodiversity conservation value and long-term sustainability. The methodology has three main factors:

- Condition factors look at immediate physical and biological attributes of wetland/riparian community (e.g., species composition, structure, fuel loads, streambank stability, etc.) using known, high quality reference sites as benchmarks.
- Landscape factors put a community in a broader context of landscape mosaic and watershed conditions by looking at both composition and functional attributes (e.g., community diversity in a wetland/riparian complex, fragmentation of natural communities, fire regime, and hydrological modifications, etc.).
- Size has implications for condition and landscape factors, yet has direct connotations for sustainability: the larger occurrence of a community, the more resilient it is likely to be in the face of impacts and thus more sustainable.

Also imbedded in the Heritage ranking process is the concept of ecosystem rarity, i.e., the more threatened an ecosystem is on a global scale, or any given species elements with it, the greater its conservation value. Taken together: condition, landscape, size and rarity—the result is a Biodiversity Significance Rank, a generalized measure for setting conservation goals. This ranking system reflects a long evolution of assessment techniques within the Natural Heritage network to aid conservation planning, yet the tools have also come to have broader applications in wetlands/riparian restoration and stewardwhip.

## New Mexico Wetlands GIS

During 1999-2000, UNM's New Mexico Natural Heritage Program designed and built a prototype wetlands and riparian assessment database—with an associated geographic information system (GIS). The overall goal: to provide a platform to archive a variety of wetlands assessment information (including target techniques), and to track the status of wetland/riparian sites statewide.

In the past, wetlands data sets have been entered into a variety of non-spatial databases or simply compiled into reports. This significantly limited spatial analysis as well as information availability for wetlands assessment, and ultimately, conservation. In this context, a GIS spatial approach seemed most appropriate, especially with the advent of relatively inexpensive and user-friendly software, useable by many people among a variety of agencies and organizations.

To develop the prototype GIS, NMNHP used data in developing the *Handbook of Wetland Vegetation Communities of New Mexico*. This provided initial database structure and necessary mapping information for developing GIS layers. They also included information from the 1999 wetlands protocol workshop (previous sidebar) since it identified reasonable parameters for the wetlands database.

Details of structure and content, including the GIS and preliminary set of 127 wetland sites, is available on CD to interested parties:

nmnhp.unm.edu

## The Children's Water Festival

For the past two years—1999 and 2000—Albuquerque, New Mexico has been the host to the Children's Water Festival. Last year, over 900 fourth grade students—from fifteen schools in Albuquerque, Rio Rancho and Los Lunas—were accompanied by over 100 teachers, parents and volunteers during two days of half-day activities:

- Conversations with the Water Wizard and Xeric City Scare Crow to learn about saving water;
- Creation of a mini-watershed, complete with its own water, soils, plants, roads, buildings, bridges, and livestock—on the Rolling River traveling trailer;
- Competed in lively games of Water Jeopardy and Dripial Pursuit;
- Viewed the tiniest of water insects; and
- Met a noble hunter of the river—a liver raptor (hawk).

After two successful years, the Water Festival Steering Committee plans to host these events on an annual basis. Past funding has come from the US Department of Energy, PNM Foundation, US Bureau of Reclamation, City of Albuquerque Public Works/ Water Resources, US EPA, New Mexico Environment Department, and many others contributors.

For more information on the Children's Water Festival—or to volunteer for the next November festival—contact S. Gorman at 505-259-7190, or waterwiz@pioneerwest.net

Visit the Water Festival website: www.pioneerwest.net

# New Mexico's Role in Water Quality Management:

The basic authority for water quality management in New Mexico is provided through the New Mexico Water Quality Act. This law establishes the Water Quality Control Commission (WQCC) and specifies its duties and powers—the State water pollution control agency for all purposes of the federal Clean Water Act. Major components of this framework include:

- adoption of a comprehensive water quality management program;
- development of a continuing planning process;
- adoption of water quality standards;
- administration of loans and grants from the federal government; and
- adoption of regulations 'to prevent or abate water pollution in the state or in any specific geographic area or watershed of the state...or for any class of waters.'

Components of this WQCC framework include ground and surface water quality standards, ground water protection regulations, underground injection control regulations, regulations for discharge to surface waters, regulations on disposal of refuse, a spill cleanup regulation, utility operators regulation, and wastewater facility construction loan regulations.

The composition of the WQCC is broad:

- Environment Department;
- Oil Conservation Commission;
- Game and Fish Department;
- Soil and Water Conservation Commission;
- State Engineer-Interstate Stream Commission;
- State Park and Recreation Commission;
- Bureau of Mines and Mineral Resources;
- Department of Agriculture; and
- Three Members-at-Large.

## How Can Water Quality Standards Protect Wetlands?

1. Water quality standards have three primary components: designated uses, criteria to protect those uses, and an antidegradation (cause no harm) policy. States designate uses based on the functions and values of their wetlands. At a minimum, these uses must meet the Clean Water Act goals to protect and propagate fish, shellfish, and wildlife, and for recreation in and on the water. States may also designate uses associated with unique functions and values of wetlands such as floodwater storage and groundwater recharge.

2. States also adopt criteria to protect those uses. Criteria can be general narrative statements such as "maintain natural hydrologic conditions, including hydroperiod, hydrodynamics, and natural water temperature variations necessary to support vegetation which would be present naturally." Criteria may also include specific numeric values, such as a dissolved oxygen concentration of 5.0 mg/l.

3. State antidegradation policies include provisions for full protection of existing uses (functions), maintenance of water quality of high-quality waters, and a prohibition against lowering water quality in outstanding resource waters. In addition, a State's antidegradation policy addresses fill activities in wetlands by ensuring no significant degradation occurs as a result of the fill activity.

4. Narrative criteria in conjunction with antidegradation policies can provide the basis for addressing hydrologic and physical impacts to wetlands (not discerned through numeric criteria) caused by nonpoint source pollution, storm water discharges, groundwater pumping, filling, and other sources of wetland degradation. When combined with a strong implementation policy, wetland water quality standards can provide the basis for such tools as best management practices, monitoring programs, and mitigation plans, as well as serve as the primary basis for Section 404/401 certification decisions.

For specific information on New Mexico's Water Quality Standards, visit the New Mexico Environment Department's website at: www.nmenv.state.nm.us/NMED_regs/swqb/20_6_4_nmac

# Some Basic Definitions and Concepts:

Aquatic macro-invertebrates—are insects or other organisms without a backbone (no spine) that are visible to the naked eye and live in the water (streams, ponds, springs, playas, etc.). Examples include stoneflies, caddisflies, mayflies, shrimp, clams and snails. If an insect, they usually live all or part of their life in water; they hatch in water; go through various developmental stages; and crawl out of the water to emerge as a flying adult.

Biological diversity—or biodiversity/species diversity in an environment is the very variety of life, and is characterized by species richness, ecosystem complexity, and genetic variation. This diversity can be altered by threats to species, habitats, and landscapes.

Clean Water Act—is also known as the Federal Water Pollution Control Act, whose original goal was "fishable and swimmable" waters for all Americans. Because of the Clean Water Act, the United States has been able to reduce water pollution and restore many rivers, lakes and coastal waters that were once little more than open sewers. However, in spite of the Act's first passage in 1972, forty percent of the nation's waterways are still classified as unsafe for fishing and swimming.

Conserve—means the use of all methods and procedures that are necessary to bring any endangered or threatened species to the point of recovery. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management, such as: research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation. In the extraordinary case, where population pressures within a given ecosystem cannot be otherwise relieved, conservation may include regulated taking.

Conservation Easement—is a voluntary, negotiated legal agreement created in partnership by a landowner and a land trust that protects the natural characteristics of the land by permanently limiting its future development according to landowner wishes, while allowing the landowner to continue to own the property, sell it, or pass it on to heirs.

Ecosystem management—is the process of balancing human expectations/needs with the continuing health of natural ecosystems.

Enhance—with respect to wetlands, is the improvement, maintenance, or management for a particular wetland function in an existing (or only slightly degraded) wetland.

Exotic species—means any species that was introduced to the habitat or area it now occupies, but did not naturally occur there. This can be plants, animals and any other living thing. Exotic species, once introduced, can compete and drive native species away, or push them to extinction.

Geographic Information System (GIS)—is computerized mapping using multiple, integrated data layers to identify and characterize resources at a local or landscape scale. GIS spatially arranges data in overlay format to assist easy comprehension of multiple layers of information.

Land trusts—are primarily concerned with conserving land, mostly by purchasing or accepting donations (of land or conservation easements). Protected land includes family farms and ranches, trails and scenic views, watersheds, forests and natural lands, crucial wetlands and wildlife habitat.

Native species—means any species that originally occurred in an area or habitat, that may or may not exist today in its historic range. Some native species are quite sensitive to introduction of exotic species, and native species may die out or leave an area because of competition from exotic species. Two common examples in New Mexico are the non-native (exotic) trees salt cedar and Russian olive, which compete with native willows and cottonwoods.

Protect—means to shield wetland/riparian areas from injurious or destructive actions and uses, and maintain the integrity of the resource.

Rehabilitate—means to restore wetland/riparian areas to a former condition, health, or useful state. This would include bringing back previous functions and values of the site and its associated wetland systems.

## Environmental Education Association of NM

EE Connections is the newsletter of the Environmental Education Association of New Mexico (EEANM)—a non-profit organization—whose mission is to provide, promote, and enhance quality environmental education by offering New Mexicans opportunities for professional development, communication, and partnership.

Formal and informal educators are invited to participate in their informative outreach programs. Whether newsletters, brown bag luncheons, workshops, natural history weekends, forestry camps, or annual conferences, EEANM is highly successful at keeping the environmental education community informed of current events.

The Board of Directors of EEANM is a dedicated group of individuals representing numerous organizations throughout New Mexico. Their vision is far-reaching for the State: A culturally and geographically diverse New Mexico citizenry with the knowledge, skills, attitude, and commitment to make informed decisions about their environment.

Among their goals, EEANM encourages high quality EE curricula that leads to an environmentally literate citizenry, by increasing awareness of programs and resources for New Mexico environmental educators. The membership is diverse and served through mailings, a membership directory, newsletter, conferences, regional meetings, and workshops.

For more information, contact the EEANM website:
www.eea.nm.org

## Bosque Education Guide

The Bosque Education Guide brings the bosque (riverside forest) into your classroom, with an environmental education program geared towards—but not limited to—third to fifth grades. The Guide covers a 160-mile stretch of the Rio Grande in four counties—Sandoval, Bernalillo, Valencia, and Socorro—from Cochiti Dam to San Marcial.

The Rio Grande bosque is the oldest continuously inhabited region in the United States and is the finest remaining example of cottonwood forests in the Southwest. The bosque provides water for more than 100,000 people and nearly 90,000 acres of irrigated lands, and is also a critical flyway and wintering ground for migrating birds.

While the Bosque Education Guide presently includes historical background and ecological concepts, it also has hands-on acitivities aimed at educating students about the protection and restoration of cottonwood forests that stretch through central New Mexico. When the current revision is completed, it will also include concepts on agriculture, recreation, riparian areas, and mitigation of human activities—to reflect a healthy "future" evolution of the Rio Grande.

The Guide is available to teachers and informal educators after attendance of a FREE workshop, which provides educational materials and teaching kits to participants at no cost. For more information, contact Rebecca Tydings in Albuquerque, at the Rio Grande Nature Center: (505) 344-7240

# Continued—Definitions and Concepts:

Section 319 Programs—of the federal Clean Water Act, appropriates monies to control or reduce water quality impairments from nonpoint source pollution, including that which is directly related to land use practices: agriculture, ranching, silviculture, resource extraction, hydro-geomodification, recreation, road construction and maintenance, and on-site liquid waste disposal. The NM Environment Department currently receives Section 319 monies for its NonPoint Source Pollution Program.

Section 404 of the Clean Water Act—gives the US Army Corps of Engineers authority to issue permits (called 'dredge-and-fill permits') for any excavation or placement of fill in 'waters of the United States' - rivers, lakes, wetlands, arroyos, or any place with the hydrologic capacity to convey water.

Soil and Water Conservation Districts (SWCD)—are state entities, that assist agricultural endeavors in the state. New Mexico has 47 districts, and their purpose is a direct reflection of their name—soil and water conservation. Employees of the SWCDs work closely with agricultural communities, neighboring ranchers and farmers, and also federal agencies, such as the Natural Resources Conservation Service (formerly known as the Soil and Water Conservation Service).

Stewardship—is the careful and responsible management of something entrusted to one's care, and more specifically, or natural resources.

Uplands—are the terrestrial or land component where there is seldom standing water.

Waters of the U.S.—include rivers, lakes, wetlands, arroyos, or any place with the hydrologic capacity to convey water. They do not include areas like manufactured cattle stock tanks, or farm ponds (within the high water mark) used exclusively for irrigation.

Watershed—is a drainage area or basin in which all land and water areas drain or flow toward a central lower-elevation collector. Examples include streams, rivers, lakes and other wetlands/riparian areas.

Wetlands—are the transitional lands between terrestrial (land) and deepwater habitats, where the water table is usually at or near the land surface, or the land is covered by shallow water. For federal purposes, wetlands must meet the three 'wetlands delineation criteria' of soils, hydrology and vegetation, as determined by the 1987 Corps of Engineers Wetlands Delineation Manual.

Wetlands and Riparian Ecosystems—are also called riparian zones/areas or riparian wetlands, and demonstrate a land/water relationship that also includes: rivers and streams (ríos) with their banks and the riverside forests (bosque); lakes and ponds (lagunas) with their shores; wet meadows, marshes and bogs (ciénegas); seeps and springs (ojos); oxbows and riverbends (ancán), and playa lakes. Since riparian zones tend to have characteristics of both the upland and the aquatic ecosystem, it is possible for a riparian zone to be both a wetlands and a transition area between an upland and a wetland. Plants growing in a riparian zone may be completely under water during a portion of the growing season, yet they may also be exposed to drought stress during other times of the year.

Wetland functions and values—refers to the goods and services provided by wetlands and their value to society. Wetlands are among the most biologically productive natural ecosystems in the world and are vital to the survival of various animals and plants, including threatened and endangered species.

Wetland hydrology—is the science of dealing with the properties, distribution, and circulation of water. An area exhibits wetland hydrology if, during a significant part of the growing season, in years of normal precipitation, the area is permanently inundated with water, or the soil is saturated to the surface.

Wetlands mitigation—means efforts made to avoid impacts, minimize impacts, repair impacts, and if the others were not possible, then compensate for unavoidable impacts and loss to the wetlands resource.

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It doesn't take an alligator or a crocodile to make a wetland in New Mexico!

## Many Thanks !

The stories portrayed in the New Mexico Wetlands Assistance Guide are true, and greater successes are happening every day, all around us. Not because government led the charge by itself, but because of the commitment, persistence and vision of many people—faces that will likely never knowingly meet one another in their lifetime.

However, they do have names, sometimes used in a derogatory manner and other times with great respect—like rancher, farmer, environmentalist, biologist, bureaucrat, philanthropist, volunteer, and….please, let's not forget the politician. It took each and every one of these people to make these successes possible—whether they liked each other, or not.

What motivated them? Some have called it 'love of the land', while others say it is for 'spiritual' reasons. Others are involved because it is their livelihood—they want a better quality of life and have learned that cooperation with the land, water, and each other can provide it.

They make good things happen. So can you!

## Common Questions About Wetlands and Riparian Areas



New Mexico Environment Department
Surface Water Quality Bureau
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Santa Fe, New Mexico 87502
Phone: 505-827-0187 Fax: 505-827-0160
www.nmenv.state.nm.us/swqb